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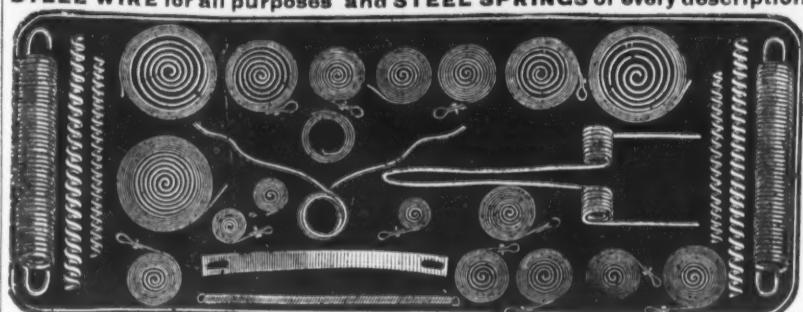
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Disastrous End of a Grand Scheme of Improvement in South America.

The once magnificent scheme for penetrating the extreme western borders of the Brazilian Empire and the mountainous territory of Bolivia lying beyond, by means of navigable communication through the Amazon River and its tributaries, has at last experienced an entire collapse.

It was confidently predicted that in the manner indicated, after surmounting the intermediate falls on the Madeira River, it would be practicable to forward to the sea-board, and thence to the markets of the world, the rich mineral treasures and choicest products of tropical growth. But the British House of Lords, puts an end to this scheme. It confirms the decision, on an appeal from the High Court of Chancery, ordering distribution to the stockholders of some \$3,500,000, thus far held in reserve in the vaults of the Bank of England, being the proceeds of a sale of \$6,000,000 of bonds of the Bolivian government in the London market. This result of a protracted course of litigation, vigorously prosecuted by Colonel Church, of New York, on behalf of the American contractors, Messrs. P. & T. Collins, of Philadelphia, and others interested, apparently extinguished the last hope of ultimate success. Notwithstanding the magnitude of the undertaking, and the fact that the English engineers known as the "Public Works Construction Company" had pronounced the scheme impracticable, Colonel Church and his associates appear to have never lost faith.

An immense quantity of material was sent out to the Amazon River for the construction of the so-called Madeira and Manoae Railroad, to cover some 180 miles around the falls of the Madeira River, the main obstacle to the opening of the route. No less than eight cargoes were sent out, mostly by steamers, comprising rails, fish-plates, engines and boilers, locomotives, houses for laborers and a full contractor's equipment, valued at \$300,000, to say nothing of money spent for charters, provisions, &c. The melancholy loss of the steamship Metropolis, which foundered at sea with nearly all on board, will be distinctly remembered. The few laborers who survived and returned to their homes excited a deep sympathy from their pitiable condition. At a later stage of the enterprise—almost exactly one year ago—when the camps on the Madeira River were broken up, the engines tallow and housed and the men employed returned to their homes, a reporter of *The Iron Age* was favored with an examination of the books in New York—or, rather, the results of an examination—when the facts as to the investment appeared substantially as above. But everything depended on the action of Parliament on the appeal of the bondholders, at the session in March, 1880, of which intelligence has just been received.

What the contractors may now see fit to do for the recovery of the large accumulations of material which were virtually abandoned in the depth of the forest jungles of South America, or to reimburse themselves for the heavy losses sustained, remains to be seen. When it was found that the drafts on England for their payment, sent out from headquarters in New York, were returned dishonored, their predicament was one of extreme perplexity and difficult to be described. It was natural that the good faith of parties in England should be more than suspected, and that jealousy of American enterprise should be imputed, for the fact stood on record in the courts of England that the American litigants could point to two decisions in their favor, including that of the Court of High Chancery, up to the time of the appeal of the bondholders to the House of Lords. The whole affair affords a striking commentary on the uncertain nature of all schemes depending on the caprice of great corporations, or on great engineering feats of difficult accomplishment, especially if the scene of operations be located far from the base of supplies, where tropical heats and all natural laws conspire to insure defeat.

Economy of Rolling Mill Engines.
A subject which deserves a closer and more general attention than has been given to it, is that relating to the economy of power of rolling mills and rolling mill engines. While in our larger and more complete modern iron and steel works progress has far advanced in this direction, and types like the Porter engine are becoming deservedly more popular, many of our minor works are still extremely wasteful. Some remarks made by Mr. Bollé before an English engineering society, are so appropriate and apply so well to the state of affairs in this country, that they deserve being placed before American iron masters. After pointing out in a few words the importance of the subject of his paper, Mr. Bollé stated that the greatest economy of steam would be obtained if the rolls were so constructed that they did their work with the least amount of motive power, and if the motor were constructed so as to produce this power at the least possible cost. The amount of power required by rolls for a certain class of work depended upon the proportions of the rolls themselves, and on the frictional resistance in the bearings and wheels. More attention had lately been paid to the construction of the housings and bearings, especially to arrangements for maintaining the bearings true with each other, and considering the heavy pressure on the roll journals, too much attention could not be paid to this point. As regarded the economical proportions of the rolls for a certain class of work, he was afraid we were still very much in the dark; certain diameters of rolls and series of grooves, having been found to answer in practice, were adhered to, but whether others might not produce the same results with a less expenditure of power, was a point which still required elucidation. It would be necessary for this purpose that indicator diagrams should be taken from a large variety of rolls doing the same work, but unfortunately reliable diagrams could hardly be obtained, and the settlement of the question would have to be deferred to some future date. The motor driving the rolls was usually a steam engine, and it might at once be asserted that the most economical steam engine used for any other purpose would be the most economical engine for rolling mills. It was well known that the greatest economy was obtained by using high pressures of steam and a large degree of expansion, regulated automatically by means of a governor, instead of working with a fixed amount of expansion and throttling the steam before admission to the cylinder. How far these arrangements were applicable to rolling mills remained to be examined. In their general type and arrangement, the engines used in iron works had

Experiments with machine-guns are now in progress both at Portsmouth and Shoburyness, England, and one particular form of the machine-gun, having found considerable favor in other countries, is now commanding renewed attention in England. It is that which bears the name of the well-known American inventor, Mr. Hotchkiss, and is usually designated the Hotchkiss revolving cannon. This weapon, says the *London Standard*, is distinguished from a mitrailleuse by the circumstance that it fires explosive bullets or small shells, and has a range approaching that of modern field artillery. Its penetrative power against thin steel plates, such as are designed to protect torpedo boats, gives it an especial value. To such an extent is this carried in the Hotchkiss gun, that the new rapid steel cruisers and dispatch vessels which are now being introduced into the British and other navies will not be able to keep out the projectiles of this seemingly insignificant weapon. The form of gun employed for this purpose has a caliber slightly less than two inches, and discharges either a steel shot or a shell weighing nearly two pounds and a half, with a bursting charge of an ounce and a half. Its projectiles are capable of piercing steel plates nearly an inch thick at a distance of more than a mile. The rate of fire would be about 20 carefully-aimed shots per minute, increased to 60 rounds when the object to be hit was near at hand. The gun is in fact a small rapidly-firing cannon. A still larger weapon has been constructed, having a caliber slightly exceeding two inches and firing 30 rounds per minute, the weight of the shell being four pounds, and the initial velocity 1500 feet per second. The former weapon, firing the projectile of two pounds and a half, was made at the request of the French naval authorities, and successful trials are now being carried out with it. These larger specimens of the Hotchkiss gun are as yet exceptional. The type most extensively adopted is one with a caliber of an inch and a half, firing an explosive projectile weighing a pound, with an initial velocity of 1400 feet per second, or a steel shot nearly one-third heavier, with a velocity of about 1200 feet. This gun is mounted on a swivel, with a species of universal joint, and is trained and worked from the shoulder by one man, a second man at the side being employed in feeding the gun with cartridges. So satisfied are the French as to the value of this weapon, that they have already more than 300 of this pattern afloat in their navy, and the number is undergoing rapid increase from the Hotchkiss factory at St. Denis. Each of their larger ships will be equipped with at least 10 of these guns, sockets being fitted both along the bulwarks and in the maintops, to which the guns may be readily shifted as required, so as to concentrate the fire in any given direction. The maximum rapidity of fire with this gun is about 80 rounds per minute; but, where accurate shooting is required, the rate would be from 30 to 35 rounds per minute. Experiments made with the weapon in England, France and Austria show that its projectile is capable of penetrating the steel plating of torpedo vessels of the Lightning class at a range exceeding 2700 yards when striking fair, or about 2000 yards if striking within an angle of 30 degrees. The steel shot will penetrate a steel plate an inch thick at rather more than 200 yards. The French experiments showed that steel plates a quarter of an inch thick were penetrated by the percussion shell at a distance of 3000 yards. Some valuable experiments as to the accuracy of fire with this naval gun have been made in Holland, and the results were deemed to be thoroughly conclusive as to the efficiency of the gun in encountering torpedo boats, however swiftly the latter might make their approach.

The Hotchkiss revolving cannon, in its general form, consists of five barrels, made of Whitworth fluid-compressed steel. These barrels are grouped round a common axis, and are made to revolve in front of a solid, immovable breech-block. This breech-block has an opening in the upper part to introduce the cartridges, and an opening underneath for the exit of the empty cartridge cases, which are thrown out by means of an automatic extractor. The cartridges are fired singly as they present themselves by the rotation of the barrels to the blow of the firing pin, and while resting for an instant motionless in front of the solid portion of the breech. The turning of a crank causes the automatic loading, firing and extraction of the empty cartridge cases. The metallic casing of the cartridge prevents the escape of powder gas at the breech. The mechanism is remarkably simple and strong. There is only one spring in the entire machine—namely, that which projects the firing-pan into the cartridge. The barrels are rifled on the polygroove system, and the arrangement by which the barrels are at rest just before the cartridge is fired permits the gunner to take accurate aim, while at the same time he continues to turn the crank. An extraordinary form of the weapon has been devised for flanking the ditches of modern fortifications, and has been tried in France with remarkable results. This gun is specially constructed to fire canister shot as well as explosive projectiles. Each of the five barrels composing the gun has a different pitch for its rifling. The result is that the cone of dispersion in which the bullets distribute themselves varies, and a dense hail of missiles sweeps along the works, no spot being missed. Thus in one minute, out of 300 dummy soldiers, all but three were hit, the ditch being swept by more than 1800 bullets, flying at every possible angle.

The Hotchkiss Revolving Gun.

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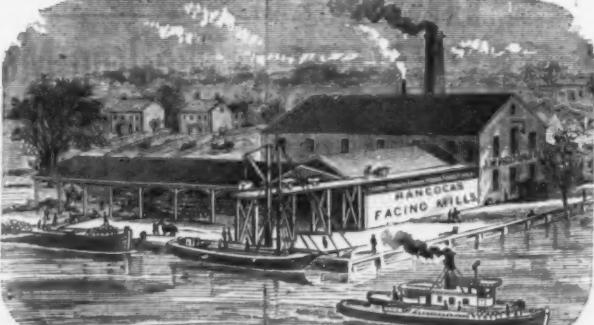
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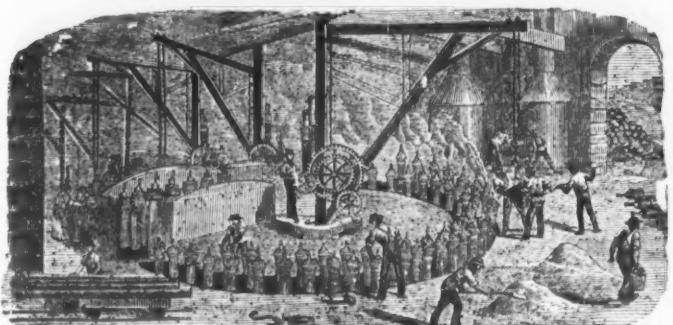
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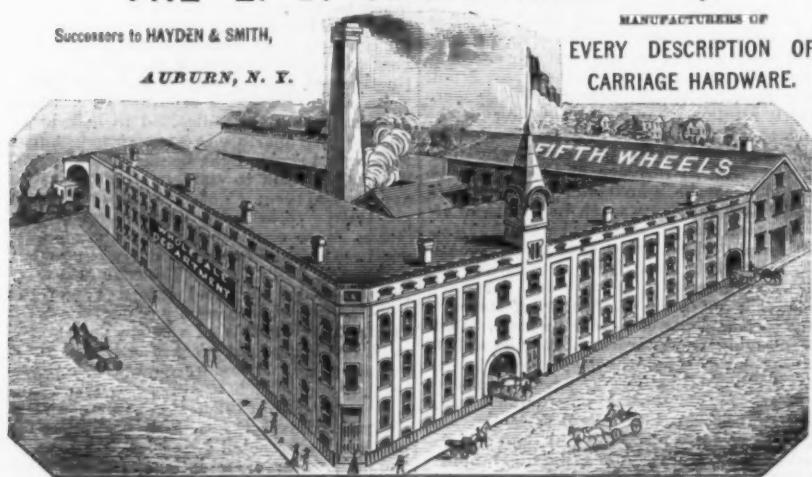
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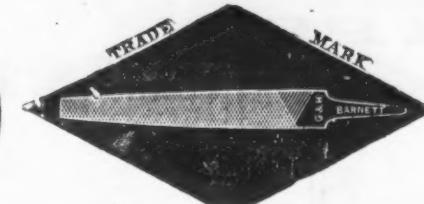
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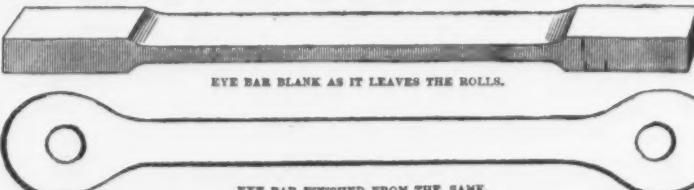
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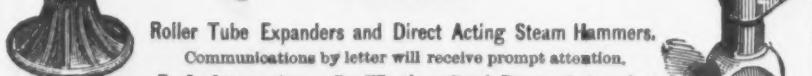
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We show in the accompanying cut a little mechanical device of much utility in the agricultural districts. The general use of wire and twine for binding grain reaped by machinery has made it desirable to have some easier and better means of cutting and removing the bands from sheaves than has hitherto been used. Especially when wire is used it is necessary that the band should be completely removed, as any lots of wire remaining makes trouble in the threshing machine, and if it follows the grain to the mill gives rise to more serious danger there. The device we show is commonly known as "the push and pull cutter," and works equally well with wire or twine. The point of the instrument is thrust into the bundle until the band is caught by the hooked projection. The motion is then reversed, as if to pull the point out again. By this motion the band is drawn into the cutter, which cuts it but does not let it go. One of the ends of the cut band is firmly held so that the band is pulled away entire, leaving no pieces behind. By pushing the point against a board standing in a box or barrel provided to receive the bands, the wire or twine is released and the cutter reset. It works easily, and does not disturb the straw nor tire the hand. It is made wholly of steel, except the wooden handle, and seems to be very desirable. Graham & Haines, 113 Chambers street, New York, are the sole agents.

Wharton's Nickel Salts and Cast Nickel Anodes and the Adams Patent.

It has been generally believed by those interested in nickel plating, that the nickel salts and cast-nickel anodes manufactured by Joseph Wharton, at Camden, N. J., were made according to the method described in Dr. Adams' patent. They have been manufactured largely for the United Nickel Company, and Mr. Wharton has protected the

firm of Fleitmann & Witte, at Iserlohn, Prussia, for several years. I am now superintending chemist for the American Nickel Works, Camden, N. J., Joseph Wharton, proprietor. I came to this country in 1866, and know that practical nickel plating was carried on in Germany and elsewhere before I left Europe. Before leaving Prussia, and while in the employment of Messrs. Fleitmann & Witte, I cast nickel anodes for that firm, which were used as anodes for nickel plating; I also, while with that firm, understood the manufacture of the double salts of nickel and ammonia; I have also manufactured the double sulphate of nickel and ammonia, and cast nickel anodes since coming to this country in 1866 for my employer, Joseph Wharton, Camden, N. J., in whose employment I then entered, and have ever since continued. I supervised for him the manufacture of these double salts of nickel, and cast nickel anodes for the United Nickel Co. in large quantities, from time to time, up to within about a year ago; these double salts of nickel and cast nickel anodes were made according to our own methods and formulas, and not according to the methods described in the patents granted to Isaac Adams, Jr.

The anodes made by us for the United Nickel Company were cast with the name of "The United Nickel Company," and the date of patent or patents, in raised letters on each casting.

I have read the first claim of the patent to Isaac Adams, Jr., of August 3, 1869. The requirement in this claim that the solution shall be so prepared as to be free from



THE "COMMON SENSE" BAND CUTTER.

United Nickel Company by charging outsiders the prices demanded by the company of their licensees. It has more than once been proposed to place Mr. Wharton on the witness stand to testify on this point, as some shrewd parties in interest have suspected that possibly he could throw some light on the subject of the value of Dr. Adams' claims; but Mr. Wharton has uniformly declined to make an affidavit, or to give any testimony which would make it worth the while of those opposed to the United Nickel Company to summon him. But he now seems to look at the matter from a somewhat different standpoint—perhaps because, under the new arrangement made last year, the United Nickel Company

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Cutlery.

FRIEDMANN & LAUTERJUNG,

Manufacturers of

PEN AND POCKET CUTLERY,
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Sole proprietors of the renowned full concave

"ELECTRIC RAZORS,"

And the celebrated "ELECTRIC SHEARS." Nickel Plated Bows.

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AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c.

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MERIDEN CUTLERY COMPANY.

THE "PATENT IVORY" HANDLE TABLE KNIFE.

The oldest manufacturers of Table Cutlery in America. Exclusive makers of the CELLULOID HANDLE for Cutlery, Knives, Scissors, and perfect substitute for Ivory. Also makers of all kinds of TABLE, BUTCHER AND HUNTING KNIVES. Illustrated catalogues with prices sent to the trade on application.

SALESROOM, No. 49 Chambers St., N. Y. Address all communications to West Meriden, Conn.



AARON BURKINSHAW,

Manufacturer of Pen and Pocket Cutlery, Pepperell, Mass. My blades are forged by hand from the best Cast Steel, and warranted. To me was awarded the Gold Medal of the Conn. State Agricultural Society.

The Celebrated VICTOR Cast Shear

SOLD HARDWARE & NOTION DEALERS EVERY-

WHERE Special Attention given to orders for export.

Manufactured only by THE RENZ HARDWARE CO.

BRIDGEPORT, CONN. U.S.A.

HENRY SEYMOUR CUTLERY CO.

Manufacturers of Full Nickel Plated and Maroon Japan Handle

SHEARS AND SCISSORS.

Every pair warranted. Sold by Hardware Dealers throughout the country.

Salesrooms, 84 & 86 Chambers Street, New York City. Manufactory, HOLYOKE, MASS.

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TRADE MARK.

FOUR PEPPERCORNS AND A DIAMOND.

GRANTED A.D. 1766 BY THE

CORPORATION OF CUTLERS OF SHEFFIELD

AND PROTECTED BY ACT OF PARLIAMENT

REGISTERED ALSO AT

WASHINGTON U.S.A. ACCORDING TO ACT OF

CONGRESS

ALSO AT LEIPZIG, IN

ACCORDANCE WITH THE GERMAN TRADE

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WORKS:—SYCAMORE ST., SHEFFIELD, ENGLAND. Established 1750.

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The most complete assortment in the U.S. of

Shank, Socket Firmer and Socket Framing Chisels.

PLANE IRONS.

Gouges of all lengths and circles beveled inside and outside. Nail Sets, Scratch and Belt Awls, Chisel Handles. A full stock of Carving Tools. Also, small boxes of Tools of best quality.

Wood Workers' Clamps,

To open 2, 2½, 3, 4, 5, 6, 7,

8 and 10 inches.

Strongest and Best Clamp Made.

Malleable Ox Shoes

with Steel Converted Toe Calk.

Five sizes.

CARRIAGE HARDWARE,

IVES, WOODRUFF & CO., Manufacturers,

(Send for Catalogue.)

MT. CARMEL, CONN.



G. W. Bradley's Edge Tools.

Butchers' Cleavers,
Butchers' Choppers,
Axes and Hatchets,
Grub Hoes and Mattocks,
Mill Pickets,
Box Chisels and Scrapers,

FOR SALE BY MARTIN DOSCHER, Agent, 96 Chambers Street, N. Y.

Cutlery.

ALFRED H. HILDICK,

12 Warren St., N. Y., Importer of CHAINS, ANVILS, VISES, &c.

HILL BROTHERS & CO., WALSALL, ENGLAND

GENERAL HARDWARE MERCHANTS,

And of BALL'S PAT. SOLID STEEL SHEEP SHEARS.

These shears are unsurpassed for cheapness, durability and utility. They are made of solid steel plate from point to point, and cannot be broken in use either in the bow or at the junction of the shank and blade. Samples can be seen at above address, or sample lots furnished.

Agents for the BENGAL RAZORS.

AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c.

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for Cutlery, Knives, Scissors, and perfect substitute for Ivory. Also makers of all kinds of TABLE,

BUTCHER AND HUNTING KNIVES. Illustrated catalogues with prices sent to the trade on application.

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Alfred Field & Co.,

COMMISSION MERCHANTS,

New York, Birmingham, Sheffield, Liverpool.

Guns and Pocket Cutlery,

SPECIALTIES.

Headquarters for

ELEY BROS.' GOODS, WRIGHT'S ANVILS,

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WOSTENHOLM'S POCKET CUTLERY AND RAZORS,

BUTCHER'S FILES, TOOLS AND RAZORS,

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GREAVES' SHEEP SHEARS,

CHESTERMAN'S TAPES,

GERMAN COIL AND HALTERS and other CHAINS,

BRADES' TROWELS AND HOES,

CANASTOTA KNIFE CO.'S POCKET KNIVES,

Etc., Etc., Etc., Etc.

All sorts of Hardware and Merchandise for im-

port and export purchased on commission.

ROBERT SORBY & SONS,

SHEFFIELD,

MANUFACTURERS OF THE CELEBRATED

Kangaroo Sheep Shears,

The best CORPORATE MARK

Shears

made.

Every

Shears

Guaranteed.

ALFRED FIELD & CO.,

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SOLE AGENTS.

Send for price list and terms.

PHœNIX CASTOR CO.,

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Send for Illustrated Catalogue.

Shipped as nuts and bolts, at very low rate of freight.

Painted Vermillion Red.

Tucker's Incomparable ADJUSTABLE STOVE TRUCK.

Packed One Dozen

In a box.

Patented, Oct. 13, 1872.

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Mounted on Martin's Patent Caster.

Eight thousand sold the first year.

TUCKER & DORSEY, Mfrs.,

Indianapolis, Ind.

Send for Illustrated Circulars and Prices.

LIGHTNING STUMP PULLER,

M. E. BUNGER & CO.,

Manufacturers, Indianapolis, Ind.

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Observe what absolute power—prying up on one end, and pulling down on the other.

Pulling 1½ inch on one end, will pull 1½ inches on the other.

Pulling 1½ inches on one end, gives 3½ times the power as is given by the usual 1½ inch square as is used.

Can be applied to any implement, either with or without tongue.

NO. 2

M. E. BUNGER & CO.,

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Send for Price and Illustrated Circular.

We make TILL CULTIVATORS

Cultivators, Scraps,

SUSCEPTIBLE OF 32 CHANCES

A—PERFECT DAY SAFE

TUCKER & DORSEY, INDIANAPOLIS, IND.

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Send for Price and Illustrated Circular.

Light, Strong and Simple.

A perfect Double Tree.

A perfect Equalizer.

A perfect Stretcher.

The best selling implement in America. Make its acquaintance by sample order in time for spring trade.

Cutlery.

McCOY & CO.,

IMPORTERS OF

Hardware, Cutlery, &c.

SOLE AGENTS FOR

THEILE & QUACK'S CELEBRATED

Pocket Knives and Scissors.

A large stock of

Muzzle & Breech Loading

English Guns.

132 DUANE ST., NEW YORK.

Silver Medal, 1878—Paris.

J. R. SPENCER & SON,

Albion Steel Works, Sheffield, MANUFACTURERS OF

FILES AND STEEL,

Table Knives, Razors, Shovels, &c., &c., of every description.

CORPORATE MARK.

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Granted 1749.

CLOTHES WRINGERS.

EUREKA WRINGER.

BOSTON.

Self-Adjusting Steel Elliptic Spring.

T. J. ALEXANDER, Manager, BOSTON, MASS.

CLARK'S RUBBER WHEELS.

This wheel is the best now in the market, and is attracting the attention of large manufacturers on account of the great saving of floors, which is ten times greater than the extra cost of this wheel.

Adapted to all purposes viz., Warehouse trucks, platform trucks, scales, boxes, baskets and heavy casters. For full particulars see the first issue of The Iron Age next month, or address

GEO. P. CLARK, Windsor Locks, Conn.

SUPERIOR QUALITY

North Carolina MICA.

We are prepared to furnish

Stove Manufacturers,

Oil Stove Manufacturers,

Jobbers and Retail Dealers,

WITH

MICA

of very best quality.

Estimates furnished on application.

THE WM. ROGERS MFG. CO.,

MANUFACTURERS OF
Superior Electro Silver-Plated Table Ware



WM. ROGERS,
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On Knives.



On Spoons.

F. WILLSON ROGERS,
Son of the late Wm. Rogers.
On Hollow Ware.



Our KNIVES are guaranteed to STRIP
12 dwt. of Silver per Dozen.
All our KNIVES are put up in a BOX.
All our KNIVES are put up in the latest
and most attractive style, with guarantee
card in every box.

Our SPOONS, FORKS, etc., are guaranteed to STRIP
On Tea Spoons, 45 dwt. per gross.
On Dessert Spoons and Forks, 72 dwt. per gross.
On Table Spoons and Medium Forks, 96 dwt. per gross.

ALL OTHER GOODS IN PROPORTION.

All our SPOONS, FORKS, etc., are plated upon
18 PER CENT. NICKEL SILVER.

The best base known for plating upon.

WM. ROGERS & SON, A. A.
TRADE & MARK
HARTFORD, CONN. 12

Sextuple Plate.

Our Hollow Ware is plated upon the
FINEST WHITE METAL, and is guaranteed
to be plated fully.

50 Per Cent. More Silver
than any other brand of goods in the market.

OUR GOODS ARE PLATED 20 PER CENT. ABOVE STANDARD PLATE.
P. O. Address, Drawer 30, Hartford, Conn.

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HALL, ELTON & CO.,

Electro Plated Ware, German Silver and Britannia Spoons.



THE "EASTLAKE." (Patented.)

Factories, Wallingford, Conn.

Salesroom, 75 Chambers Street, New York.



FORKS, SPOONS, Etc.,

Manufactured from Cast Steel, Plated with Nickel and Silver.

WALLACE BROTHERS, Wallingford, Conn.

THE HOWE SCALE CO.,

Improved Scales & Weighing Machines of every Variety.

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Works at Rutland, Vt.

SCUTT'S



PATENT

Four Pointed Steel Barbed Cable Fence Wire,
Manufactured by H. B. SCUTT & CO., Buffalo, N. Y.

(See Monthly Iron Age.)

HOLMES, BOOTH & HAYDENS,

MANUFACTURERS OF

Finest Quality Silver-Plated Spoons, Forks, Knives, &c.

" JAPANESE "
PATENTED.



" JAPANESE "
PATENTED.

NOTICE.—We guarantee the base of our Spoons, Forks, &c., to be full 12 per cent. Nickel Silver, and extra heavily plated with pure Silver. Our goods are all hand burnished, and are first-class in every respect. We pack our Spoons and Forks one dozen in each box.

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NEW YORK.

Factories,
WATERBURY, CONN.

18 FEDERAL ST.,
BOSTON.

T. C. CONWAY, 90 Chambers Street, New York,

Sole Agent for
THE RED JACKET REVOLVER,

Rupertus' Revolvers, Breech-load-
ing Shot Guns and Rifles; Nichols Cutlery Co.'s Table
Knives and Forks; Star Cutlery Co.'s Pocket Knives.

Rupertus' Single Breech-Loading Shot Gun, Twist Barrel.



Romer & Co.

Established 1837.

Manufacturers of Patent Scandinavian or Jail
Locks, Pad Locks for Railroads and Switches,
Also Patent Stationary & R. Car Door Locks, Pat-
ent Piano and Sewing Machine Locks,
141 to 145 Railroad Avenue, NEWARK, N. J.
Illustrated Catalogue sent to the trade on applica-
tion.

Roger's "Duplex" Harrow.

The accompanying cuts represent an improved harrow, manufactured by M. E. Bunker & Co., Indianapolis, Indiana. The construction of this implement will be readily understood from the figures. It consists essentially of two frames, connected by a flexible hinge. The teeth are fastened to the frame rods in such a way that they can be readily adjusted. They can be placed in any position on the frame rods, and can also be set at any angle, according to the nature of the soil. Fig. 1 shows the harrow ready for use in the field. When on the road it is folded as shown in Fig. 2, thus forming a sort of sled, and keeping the teeth from contact with the road. The harrow, with the exception of the shoes or runners, is made entirely of $\frac{1}{2}$ inch iron, the rods being firmly bolted together. The teeth are of steel. The flexible hinge enables the implement to adapt itself to the inequalities of the ground, and the teeth being reversible, are self-sharpening. It is claimed they can be used until only $2\frac{1}{2}$ inches long.

INDUSTRIAL ITEMS.

NEW HAMPSHIRE.
Mr. C. E. Marston, of Dover, has changed the name of his establishment from Dover Iron Foundry to Dover Foundry and Machine Works.

MASSACHUSETTS.

The Ashcroft Manufacturing Company, Boston, received orders in two days, recently, for over 1000 steam gauges, half of them to be provided with brass cases. Their gauges are used by the Hartford Boiler Iron Company for test gauges. They also supply the United States Navy Department and the Treasury Department, who furnish *every* inspector of steamboats with their test gauges. During the last year they made over 11,000 of one size gauge.

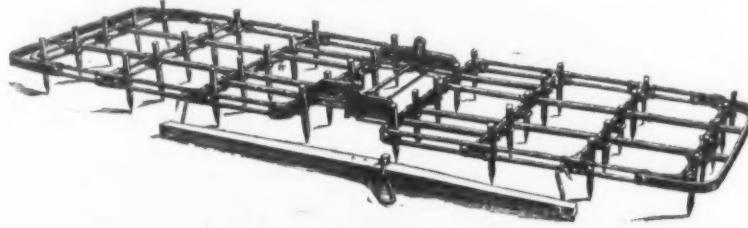
The Boston and Albany shops in Springfield will build 30 or 40 freight cars as soon as the iron which has been contracted for can be obtained. They are now fully employed on repairs of old cars, and the force is being gradually increased.

The Clinton Wire Cloth Company are to build a new mill 150 by 56 feet, for weaving, a new blacksmith shop, and an addition of 36 feet to the side of the present tower.

The Wood cutlery business will be located at Northampton.

NEW YORK.

D. Saunders' Sons, at Yonkers, are very busy at present filling orders for pipe-thread-



ROGER'S DUPLEX HARROW.—Fig. 1.

old rails. An examination of these details will show the marvelous growth of the iron trade of Pittsburgh. We may instance a single railroad, the entire receipts of which for the 12 months of 1877 amounted to 20,913 tons. During the three months ending March 31, this year, the same road has delivered the following lots: Iron ore, 36,608 tons; scrap iron, 4,416 tons; pig metal, 11,880 tons; old rails, 6,688 tons; blooms and billets, 10,800 tons, making a total of 60,664 tons, or 40,051 tons more than the entire receipts of 1877. There has been a very material increase on other roads. The increase for the past three months exceeds the

ing machines. Among their recent orders are one for three 6-inch machines for Allison & Co., Philadelphia; one for two 4-inch sewing machines for A. M. Byers & Co., Pittsburgh, and one for one 8-inch threading machine for the Cambria Iron Works, Johnstown, Pa.

The Jefferson Iron Company, of Antwerp, is preparing to put its iron furnace at Sterlingsville in blast. The one at Lewisburg is making 6 tons of pig iron a day.

NEW JERSEY.

The Warren Furnace, at Hackettstown, was lighted up some time ago. It is reported that several important improvements are to be made by the furnace company.

The Ferracut Co., of Bridgeton, build about 50 different styles and sizes of foot and power presses and also spinning lathes, dies of every description for sheet metal work, and a full line of canner's tools. They are now building a new power embossing press for extra heavy work such as watch cases, knives, forks and spoons; nuts, washers, &c. They have lately issued a handsome 45-page catalogue and price list.

PENNSYLVANIA.

The Richmond Furnace, at Richmond, Franklin County, has been put in blast, and is turning out a superior quality of foundry iron.

The Philadelphia Ledger states that the famous Southwark foundry, which covers the block at Fourth street and Washington avenue, formerly known as "Merrick's Foundry," has been sold by its present owners, Merrick & Sons, to a company of capitalists. These have acquired the patents of the Porter-Allen high speed engine, which promises, from experience at some of the largest rolling mills in the State, such as the Cambria Iron Company of Johnstown and the National Tube Works at McKeesport, to be one of the engines of the future. The new concern, it is understood, starts with a large number of orders on hand, which are expected soon to tax to the fullest extent the capacity of the works, large as it is.

The most recent improvement in steel making in this country is the introduction of the Pernot Furnace. The method of manufacture is too well known to our readers to require description. With the exception of the rails made by this process at Springfield, Ill., the only place where these furnaces are in use in this country is at the steel works in Johnstown, where are located two mills with capacity of 40,000 tons per annum. This product is entirely controlled by the Gautier Steel Company, who are perfecting arrangements to roll this amount without decreasing their production in other grades.

The two furnaces of Wm. H. Clymer & Co., the Temple and the Mount Laurel, near Temple, Berks County, are in operation, and are doing very well.

The Lebanon Manufacturing Company, at Lebanon, is at present engaged on an order for 26 engines of different sizes. They also have an order for 350 box freight cars, which they expect to have completed in about four months. They report that they are full of furnace and other general work.

The rolling mill and other property of the Hope Iron Company, of Pottstown, have been purchased by the Pottstown Iron Company, and were started up under the new management on the 29th ult. It is understood that all or nearly all of the Hope employees will be retained. Rumor has it that the Hope Iron Company will buy ground elsewhere and erect a larger mill.

The Messrs. Matheson, late of the National Tube Works Company, of McKeesport, in connection with Mr. Jas. Young, of Middle-town, Dauphin County, have bought the Middletown Pipe Works, and will enlarge the same, and go into operation at an early date. They will commence the erection of an improved lap weld mill at once, and also have in contemplation the erection of a rolling mill to make special iron for tubes. The firm is known as the American Tube and Iron Company.

The two blast furnaces of the Westerman Iron Company, at Sharon, started up on the 23d ult., and are both working well.

The furnace of the Warwick Iron Company, of Pottstown, was put into blast on

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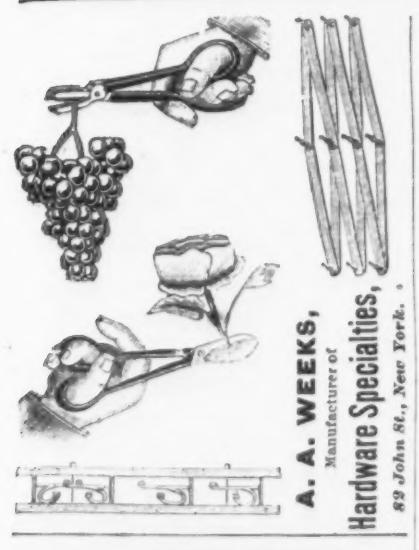
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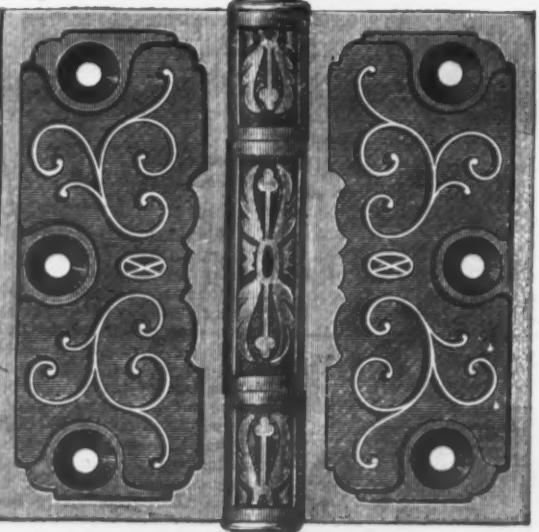


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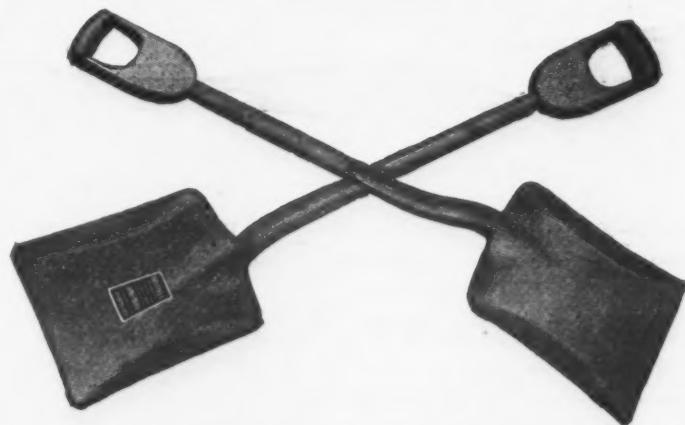
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AND

Metallurgical Review.

New York, Thursday, April 8, 1880.

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The publishers of *The Ironmonger*, 44 Cannon street, London, England, will receive orders for subscriptions and advertisements on our regular terms.

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Thirty-seventh Page.—Boston Hardware and Metal Prices.

A correspondent in the retail hardware line writes us a complaint of the present system of packing hardware, and asks us to urge upon manufacturers the wisdom of abandoning the gross, half gross and quarter gross and dozen method, and adopting instead packages of ten, twenty, twenty-five, fifty and one hundred. The reason urged in support of this suggestion is that it would suit our currency better and save the retail dealer considerable time on every invoice. We are not sure that the suggestion is a good one, but if it were, such is the conservatism of trade that it is not likely to be adopted by manufacturers. The plan that it would facilitate the convenience of the retail dealer is not so strong as it would be if goods were sold by a net list. He has to figure out the cost of his goods in any case, and it would not, in any conspicuous degree, promote his convenience to have the change made. It would, on the other hand, necessitate the publication of new catalogues and a general revision of list prices, which would

be a rather serious matter to many of the houses. All things considered, we doubt if the retail trade would favor the proposed change. Business methods have conformed themselves to the existing system of packing in dozens and multiples of 12, and while this may not be the best possible system, it is easier and cheaper to continue it than to change it.

The Commercial Influence of Great National Armaments.

The London *Economist* has lately published some statistics of European armaments which are well calculated to startle the thoughtful reader and make the taxpayer shudder at the outlook before him. It appears that the present taxation of Europe, estimated on a basis of 4 per cent. interest, represents a capital of £3,200,000,000 which is lost to the arts and industries that promote the progress of civilization and improve the condition of the people. The effect of this enormous burden cannot but be felt in a notable degree in the distribution of the world's commerce. On this point the *Economist* says:

It is becoming more clear, day by day, that the industrial competition of the future will be between North America and Europe. North America, possessing all climates, produces, or can produce, everything, and has fairly embarked on an industrial career, and will without doubt ultimately relieve herself from the shackles of protection. The United States are rapidly paying off their debt, the only serious national debt of the continent, and it is possible, if not probable, that the republic and Canada may hereafter be bound together by some more or less strict engagement of customs union. Should that occur, it is extremely probable that by 1900, only twenty years hence, North America may compete with Europe in all the markets of the world for the sale of produce and manufactures, which will have to provide in America only £60,000,000, against the European £60,000,000 for State expenses; in other words, that Europe may be faced by a competitor equal to her in all resources except number of hands, and paying not more than one-tenth of her total taxation. That is, of course, putting the matter favorably for America, for we suppose the United States' debt paid off; but it is not putting it too favorably, for we have omitted the heaviest item in the calculation. Europe, besides paying ten times the total sum in taxes, will have no healthy young men between 19 and 22 engaged in industrial production. They will all be in the army, as outside these islands they already are. As the period of energetic labor with all men only lasts about thirty years, Europe, besides her immense taxation, will be sacrificing, in comparison with America, one clear tenth of her available supply of human force. We do not wish in the least to exaggerate the total result, for we are well aware that all economists have underrated the capacity of mankind to endure taxation, and have forgotten too much that oppression is sometimes a stimulus; but we have no hesitation in saying that, as between one continent and the other, the older one will enter into the ultimate struggle loaded with a State demand, to be satisfied before profit is realized, equal in weight to a universal income tax of quite three shillings in the pound. That is a heavy load to stagger under, and there is every sign as yet that it will be steadily increased, for the military experts are ruling, and it is evident from the speech of the ablest among them (Von Moltke) that they do not seriously care about the increase of the financial burden.

Every year makes more apparent the wisdom of the advice of Washington—"Avoid entangling foreign alliances." No doubt the evil of great armaments will work out its own cure, as all such evils do in time, but it is a problem with which the statesmanship of the present seems incapable of dealing. Fortunately, the future of this country is not wholly dependent upon the decadence of Europe; but as the old world becomes exhausted through the operation of causes which are sapping the energies of the nations, our wiser policy will yield a larger and more general prosperity. For us, the question of the maintenance of great military preparations has this much of interest, at least. Of course the *Economist* makes our realization of the benefits which would naturally result to us from the unfortunate condition of Europe dependent upon our adoption of the principle of free trade. This is where it makes a great mistake. Given universal free trade and England would grow rich with a burden of taxation which would now be national bankruptcy. Give her all the foreign markets she wants and it would surprise the statisticians how much she could well afford to spend annually for her army and navy and for foreign wars. Without this she cannot prosper, and as her commerce declines her power will decline with it. Universal free trade is impossible; and the country which is entrapped into such relations with England will have occasion to realize that the British nation possesses a wonderful degree of vitality. If we are to compete with all the world in twenty years, it would not be well to begin by abandoning a policy which more than anything else has developed and diversified our industries and made us already formidable as competitors of Europe. It is too soon, at least, to give up the substantial benefits of protection for the spoonful of pot luck which is promised as the result of free trade.

Secretary Sherman has the reputation of being an able, far-sighted man; but his weak, vacillating course on the hoop iron question shows that his cunning has deserted him, in one instance, at least. The object of the Secretary is too transparent to deceive anybody except himself, and by his action he defeats the very end in view. The Presidential "bee" in the bonnet of the ablest statesmen makes fools of them at times, and Secretary Sherman will find that his bluster and threat of what he would do if Congress did not take action on the hoop iron subject by April 1, and his weak breakdown, will gain him neither friends nor fame. The circumstances have not changed,

but new arguments are advanced why he should or should not take the action he decided he would take. The simple reason is, he dare not. He tried to shift the responsibility on Congress, but that body refused it, and now he dare not carry out his threat.

The Panama Canal Project.

M. de Lesseps has finished his travels on the American continent and started on his return to Europe. We do not, of course, know what impressions he has derived from his visit to this country, but we venture the opinion that he has learned more and accomplished less than he expected when he came here. The result of the recent English elections will no doubt cause him to change his plans materially—if, indeed, he had not already decided to do so before the returns reached here. Under Mr. Gladstone's premiership the policy of the English government will be decidedly favorable to fair and friendly relations with the United States on all questions of international interest. If, as is currently reported, M. de Lesseps had such an understanding with Lord Beaconsfield as made him feel quite indifferent to the protests and demands of the United States, the formation of a new cabinet under liberal leadership will cause him to look at the matter from a very different standpoint. He can expect no countenance from Mr. Gladstone's cabinet in any course which does not recognize the weight of any just conditions that this country may impose upon those who are engaged in furthering the scheme of an inter-oceanic canal. Without such countenance as Lord Beaconsfield is supposed to have given his scheme, M. de Lesseps would never have manifested the indifference he felt, or assumed, with regard to the views and utterances of Congress on this important subject.

In this view of the case we can understand to some extent what has been generally regarded as a great mistake on the part of M. de Lesseps. Doubtless he thought he could well afford to shrug his shoulders and smile apologetically at the popular discussion of the Monroe doctrine which his visit has raised. But it is quite evident that he has overrated the strength of his position and underrated the meaning of the popular feeling in this country. Throughout he has treated this country with a degree of courteous disrespect which has not been misunderstood or mistaken. The American commissioners, who at the eleventh hour were invited to take part in the deliberations of his so-called scientific commission, had really nothing to do with its work, and are consequently but little responsible, if at all, for the valueless character of the results reached by it. Thus, without openly insulting the United States, he has practically ignored it from the first; and nothing which he said or did while here has changed the unfavorable impression his course has created. It is not probable that he is ignorant of this, or that he takes home with him any seriously mistaken impressions on this point. If he has read the newspapers, he has had no difficulty in correctly interpreting the meaning of the personal attentions our people were pleased to show him during his visit. He must have seen that if the success of his scheme is in any degree dependent upon the approval of this government and the subscriptions of our moneyed classes, it is already a failure. His palio offer of \$60,000,000 of stock to American investors is likely to be "respectfully declined, with thanks." There is no probability that such an amount will seek investment in an enterprise which the American stockholders are not likely to control, and which does not promise financial success, even on the basis of M. de Lesseps' estimates. Whether the enterprise is practicable or not is still an open question, and one on which there is room for differences of opinion. Our business men generally are not impressed with the prospects of the scheme as an investment, especially in view of the attitude which our government has assumed toward it; and our people are not likely to be bewildered by the brilliancy of the engineering work proposed, or led into paying for it until it gives better promise than now of meeting an actual, practical, pressing requirement of commerce. By his visit to this country, M. de Lesseps has done nothing to change this feeling. All that he can take away with him is a pleasant impression of American hospitality, and the conviction that the American people are not easily influenced against their judgment.

There is a report abroad in the West to the effect that the Amalgamated Association of Iron and Steel Workers will refuse to work foreign pig and scrap iron, including old rails. There is no doubt that the advisability of taking some such course has been discussed in the lodges of the association, and at the last meeting of the Grand Lodge the old rail side of the question was ventilated—at least some of the questions that arise in mills where old rails have been used, were discussed. In the use of scrap, at least half of the work of boiling is done away with. The price paid for scrapping in a boiling furnace, or "bushelling," as it is termed, is one-half the price for boiling. The output, however, is largely increased, and a puddler can make as much per day scrapping as puddling, if not more, and so far as the objection to the use of foreign scrap is concerned, this increased output is doubtless the great difficulty. It seems to be the

policy of the association to restrict production. There is, perhaps, not a rolling mill in the country, certainly not many, that would be allowed to work up to its full capacity. The use of this foreign scrap that is arriving in such quantities is largely increasing the output of these mills in the way pointed out, and the puddlers are growing restive under the loss of work that results. Just at this time the demand for iron is so great that the puddlers are kept busy, but when the demand falls off and the tendency is to use scrap to as great an extent as possible, this feeling will become stronger and definite action will then be taken, if not before.

The Position of Copper.

The position of copper is becoming one of unusual interest on both sides of the Atlantic. The visible supply in England and France at latest dates was the following:

Stocks of copper.	1880.	
	Mar. 1.	Feb. 1.
Stocks in Europe:		
Chili ores and regulus, Liverpool and Swansea (equal to fine).....	270	270
Chili bars in Liverpool.....	25,317	25,928
Chili ingots in Liverpool.....	4,316	4,318
Foreign copper (chiefly Australia) in London (landed).....	50	50
Foreign copper (chiefly Australia) in London (lading).....	4,525	4,526
English copper in London.....	300	170
Chili bars and ingots and barilla in Havre (estimated).....	50	50
Other copper in Havre.....	1,200	1,200
Stocks of copper contained in other foreign and Spanish precipitate (fine).....	731	533
Afrot and chartered from Chili to Europe (advised by mail):		
Ore and regulus (equal to fine).....	2,374	3,063
Bars and ingots.....	9,679	10,905
By cable: Ores and regulus (fine).....	2,356	2,356
Bars and ingots.....	6,150	8,250
Afrot from Australia (advised by mail):		
Fine copper.....	1,625	1,281
By cable: Fine copper.....	1,925	2,000
Total.....	61,044	59,644

Instead of improving, the statistical position has therefore been getting worse, due principally to the heavy charters on the West Coast, stimulated by a favorable exchange and low freights. It had been expected that the war on that coast would have curtailed copper production, for it was believed that many minors would be enrolled in the Chilean army; but this, it seems, has not been the case. Chili, therefore, exports about as much copper as ever, as the ensuing table will show:

EXPORT OF COPPER FROM CHILI.	Tons.		
	Tons.	Tons.	
1860.....	15,269	1870.....	49,139
1861.....			

the record of the Lucy Furnace No. 1 for March will overwhelm them with astonishment. When this furnace reached 845 gross tons 1720 lbs. in the week ending March 21, its manager thought surely that must be the maximum, but in the week ending March 28 the furnace made 857 gross tons 530 lbs.; and, what is still more remarkable, in the seven consecutive days ending March 31, the production was 945 tons 1580 lbs., and for the month of March, 3684 tons 500 lbs., an average of 1118 tons 1895 lbs. daily. The Lucy still retains its pre-eminence, and bids fair to reach the output that has been predicted for it—1000 tons in seven consecutive days.

A Statement that Should be Substantiated.

It is an uncommon thing when strikes are frequent and continued in any trade or locality, to have the charge made that manufacturers in the same trade and in other localities are aiding and abetting the strikers—not only with sympathy, but with material aid. If a strike occurs in the East, it is asserted that the Western manufacturers aid its continuance, and when the West has its works stopped, a similar charge is made against the East. To the honor of trade and fair business rivalry, it can be said that these assertions rest, in most cases, on no better basis than flying rumor, which it is impossible to trace to any source, much less to any responsible party. They are based usually on suspicions. It is possible that the partners in a co-operative concern, or a stockholder in some establishment who is a workman, may, as a workman, have sent aid and comfort; but even this is often only suspicion, and it is rarely any one with character or reputation for truthfulness can be found to give currency to these statements, much less to fatten them. A case, however, has just come to our notice in which a responsible person is credited with such statements, and what is worse, the charge is against our friends across the water. Hon. Carroll D. Wright, chief of the Bureau of Labor Statistics of Massachusetts, is reported as saying that "paid agents of English manufacturers are at this moment at work in New England, with the sole purpose of inciting strikes among our operatives."

It hardly seems possible that Mr. Wright would have made such a statement, if he did make it, unless he had good authority for the same, and if he has such authority it is certainly his duty to give it, that methods of rivalry so detestable may meet with the scorn they deserve. Such methods spring from the same spirit that leads the assassin to rush from concealment and stab his rival, whose only crime is that he is his rival. It has not the first element of honorable rivalry, and for the fair name of trade it should meet the severest condemnation.

We regret to say that the enterprise and enthusiasm of the scientific reporters of the daily press have again placed them in a ludicrous and by no means enviable position. It appears that they have taken themselves to the den of the "wizard of Menlo Park," and have there learnt wonderful things about the working of tailings. Mr. Edison seems to have become suddenly an amateur metallurgist, and while we hope that he may be more successful than scores of inventors who "failed to get a process for the sulphurite," we fear that he will find more than one stumbling block on his way to success. He has, however, permitted himself to be handicapped in the outstart by the ridiculous misrepresentations and statements of the reporters of the daily press, before whom enchanting visions of "millions in it" seem to have risen, and we regret to say that some of our technical journals have repeated and commented in the same spirit on the future of the "Edison Ore Milling Company." "After crushing and 'triturating' (whatever that may be) auriferous quartz in the ordinary way, and after having thus extracted an average of \$20 to \$40 a ton, Mr. Edison takes the refuse and extracts from it—at a merely nominal cost of \$5—all the way from \$80 to \$750, or even \$1400 a ton." Such figures are sufficient to make any gold mill manager's hair stand on end, and with tailings like these we would soon find hundreds of eager capitalists paying from \$50 to \$700 or even \$1300 a ton for every ton of such refuse. All over our Western mining regions expensive and great mills would rise out of the ground, specially designed for making tailings out of gold ore. The \$20 or \$40 which the ore would first yield before being turned into the more valuable tailings might be given away, in order to realize the well-known miner's dream of "paying the whole national debt." It is to be hoped that this small portion of the proceeds will not be diverted to other uses, or that Mr. Edison, with a false sense of economy, will dispense with the intermediate process of producing high grade tailings and apply his process to the ore directly.

Production of Iron and Steel in France in 1879.—The French Ironmasters' Association publishes, in the *Bulletin du Comité des Forges*, the following statistics relating to the production of iron and steel in France during the year 1879: The blast furnaces of that country turned out 1,344,759 metric tons of pig iron—falling off, as compared with the preceding year, of 72,314 tons. There is an increase, however, in the quantity of rolled iron manufactured, the figures being 768,335 and 838,706 tons

respectively. The production of iron rails declined from 125,000 tons in 1878 to 43,000 tons in 1879. Merchant iron and bars figure in the above for 668,226 tons. About 339,000 tons of steel of all kinds were made—an increase of 57,600 tons, when compared with the previous year. This increase is due mainly to the Bessemer and open-hearth works, which turned out in 1879, 314,691 tons, other kinds of steel exhibiting a decline to 24,718 tons. French railways bought their whole supply of rails from home manufacturers, the amounts being 202,435 tons of steel rails and 27,604 tons of iron rails

NEW PUBLICATIONS.

STEEL: ITS HISTORY, MANUFACTURE, PROPERTIES AND USES. By J. S. Jeans, secretary of the Iron and Steel Institute. E. & F. N. Spon, publishers. Price \$14.50.

One of the most important metallurgical works written within the last few years is that published by Messrs. E. & F. N. Spon. The volume is so bulky, covering more than 550 pages, that we must limit ourselves for the present to a simple statement of its contents, without entering into any inquiry as to the methods used in presenting so important a subject, or the accuracy of Mr. Jeans' information or judgment. This we must reserve for a future occasion. We are, however, enabled, from a cursory examination of the book, to strongly recommend it to those who desire to possess in a convenient shape a full summary of the literature of the subject up to date. The work is divided into 29 chapters. No. 1 giving a sketch of the early History of Steel; No. 2, its Modern History and Development in Great Britain; No. 3, the Progress of Invention; No. 4, History of the Bessemer Process; No. 5, the Siemens and Siemens-Martin Processes; No. 6, other Processes for the Manufacture of Steel, including Martin's, Parry's, Uchatius', Attwood's, Heaton's, Robert Mushet's, Sherman's, Larkin's, Henderson's, Gallet's, Peters', Spence's, Shieldfield's, Lane's, the Styrian, the Carinthian, the Paal Works, Terrenoire, Whitworth, the Neuberg. Chapters 7 to 13 inclusive, which close the first section of the book, treat of the process of manufacture, the statistics, resources, &c., of America, Germany, Austria, Russia, Sweden and other countries. The second division comprises chapters 14 to 17, giving details of the cementation, the Bessemer, the Siemens Martin and other methods, while the third section, treating of the chemical and physical properties of steel, embraces: Chapter 18, Phosphorus in Steel; 19, the use of Manganese; 20, Spiegeleisen; 21, Sulphur in Steel; 22, Silicon in Steel; 23, Tensile Strength of Steel; 24, Mechanical Tests of Steel; 25, Analysis of Steel. The fourth section deals with the uses of steel as applied to railway purposes, shipbuilding, bridge building, guns and armor, &c.

INDUSTRIAL MONTHLY AND COMMERCIAL AND STATISTICAL REVIEW. New York: E. Young & Co., Publishers.

We are sorry that this latest candidate for public favor in the field of newspaper enterprise has not a more specific object in view than its plan would seem to indicate. Dr. Young has had an extensive experience in this class of work. His long and honorable connection with the Treasury Department, as Chief of the National Bureau of Statistics, has given him unusual facilities for successful work in statistical journalism, which, however, would be more profitably employed if the *Industrial Monthly* should devote itself to some specific class of statistics, and work them up into the greatest possible fullness and accuracy. It would seem to us that the department of textiles and textile fibers is an inviting one. A journal making a specialty of full and complete statistics of everything pertaining to cotton, wool, silk, flax, &c., and the manufacture and movement of all fabrics into which they enter, would be of value to a very large class of manufacturers and merchants, while one of more general and less specific statistical interest is less likely to be appreciated. We wish the new venture every success; but business men now-a-days have very little time to spare for the acquisition of general information, and for this reason those trade journals are most successful which give one class just what they want to know, and very little else.

RAILWAY MAP OF THE UNITED STATES. Published by the National Railway Publication Company, New York.

For easy and frequent reference, a good map of the railways of this country will be fully appreciated in every office. That just published by the National Company will, we believe, from a close examination, be found to meet the requirements of most of the readers of *The Iron Age*. It is of suitable size for offices, and is clearly and well printed on strong paper.

The export movement is receiving a new impetus, vessels now leaving American ports taking out much better cargoes, notably of grain, and shipping interests are in a more healthful condition. But it is noticed that the great bulk of outward freights consists of domestic produce. Only here and there in the list do we find such items as machinery, implements, hardware, &c., and the aggregate of these goes only a little way toward making up the grand total of more than seven and a quarter millions for March. Upon inquiry, we learn that our merchants do not observe any improvement whatever in the export of general manufactures, excepting as a demand exists abroad for certain articles or special lines which cannot be obtained in other markets. As for the manufacturers, they appear, as a whole, to be supremely indifferent to the foreign trade, being full and overflowing with domestic orders paying a full profit. The check received from advancing prices is yet in full force, and so long as the American market continues relatively higher than others for staple goods, just so long will business be confined to "sorting up" and special orders on a restricted scale.

METALLURGICAL NOTES.

MALLEABLE NICKEL AND COBALT.

At a recent meeting of the Mining Club, at Freiberg, Saxony, Prof. Winkler exhibited samples of malleable nickel and cobalt, produced by the Pfannenstiel Works, where experiments have been made in that direction since 1866. It was found that the most careful decarbonization of cast nickel and cobalt, attained by melting them with their oxides, did not lead to the result required, the product showing a strong inclination to crystallization, and breaking to pieces in the rolls or under the hammer. Prof. Winkler suggests that possibly this is owing to the fact that decarbonization was carried too far. In 1877 Herr Edelmann succeeded in rolling thin nickel sheet and wire, but it was not possible to detect the conditions asuring regular success. Fleitmann's process of adding magnesium was then tried, but proved a failure at Pfannenstiel. Soon afterward, however, Herr Bischoff found that cobalt of great ductility and toughness could be obtained regularly by subjecting the metal to a carefully conducted refining process. The same method afforded satisfactory results with nickel also, the metal welding well.

THE KRUPP WASHING PROCESS FOR PUDDLING.

Some details are given by Herr C. Petersen, of Eschweiler, Germany, on the working in the puddling furnace of pig purified in the Krupp washer, which as they supplement the data given by Mr. Holley (*The Iron Age*, Oct. 9, 1879) will be read with interest. At Essen, where the runs given below were made on the 12th and 13th of August, 1879, the Krupp washer is too far from the puddling plant to admit of the metal being run directly into it after treatment. It is cast, therefore, and then remelted in a cupola, from which it is tapped into the Bicherow puddling furnaces. With a plant specially erected, this remelting would, of course, be unnecessary. The following is a copy of the record of the working of 18 charges, the pig of No. 1 to 6 inclusive, being a mixture of 80 per cent. of Metz & Co. and 20 per cent. of Kupferdreh pig, Nos. 7, 8, 9, 13, 14 and 15 Metz & Co. pig alone; Nos. 10, 11 and 12 Sclessin, and Nos. 16, 17 and 18 Isedt pig. The first 12 charges were made on the 12th, the last on the 13th of August.

No.	Tapped When	Charg'd	Wt. iron obtained	Time, h. m.	Analysis of crude pig.						Washed pig.						
					Temp. in	Temp. in	Carbon	Phos.	Sul.	Silicon	Mang.	Carb.	Phos.	Carbon	Sul.	Phos.	
1	10...	8.10	8.48	10...	9.10	9.42	500	445	1.20	3.10	1.84	0.35	0.31	0.07	3.10	0.22	0.08
2	10...	9.10	9.48	10...	9.45	9.70	500	445	2.00	3.10	2.00	0.35	0.31	0.07	3.10	0.22	0.08
3	10...	10.45	10.80	10...	10.5	10.40	500	474	2.55	1.65	2.00	0.35	0.31	0.07	3.10	0.22	0.08
4	10...	11.40	11.80	10...	11.5	11.40	500	485	2.00	3.10	2.00	0.35	0.31	0.07	3.10	0.22	0.08
5	10...	12.40	12.80	10...	12.5	12.40	500	475	2.20	1.65	2.00	0.35	0.31	0.07	3.10	0.22	0.08
6	10...	13.40	13.80	10...	13.5	13.40	500	470	2.00	2.20	2.00	0.35	0.31	0.07	3.10	0.22	0.08
7	10...	14.40	14.80	10...	14.5	14.40	500	470	2.00	2.20	2.00	0.35	0.31	0.07	3.10	0.22	0.08
8	10...	15.40	15.80	10...	15.5	15.40	500	470	2.00	2.20	2.00	0.35	0.31	0.07	3.10	0.22	0.08
9	10...	16.40	16.80	10...	16.5	16.40	500	470	2.00	2.20	2.00	0.35	0.31	0.07	3.10	0.22	0.08
10	10...	17.40	17.80	10...	17.5	17.40	500	470	2.00	2.20	2.00	0.35	0.31	0.07	3.10	0.22	0.08
11	10...	18.40	18.80	10...	18.5	18.40	500	470	2.00	2.20	2.00	0.35	0.31	0.07	3.10	0.22	0.08
12	10...	19.40	19.80	10...	19.5	19.40	500	470	2.00	2.20	2.00	0.35	0.31	0.07	3.10	0.22	0.08
13	10...	20.40	20.80	10...	20.5	20.40	500	470	2.00	2.20	2.00	0.35	0.31	0.07	3.10	0.22	0.08
14	10...	21.40	21.80	10...	21.5	21.40	500	470	2.00	2.20	2.00	0.35	0.31	0.07	3.10	0.22	0.08
15	10...	22.40	22.80	10...	22.5	22.40	500	470	2.00	2.20	2.00	0.35	0.31	0.07	3.10	0.22	0.08
16	10...	23.40	23.80	10...	23.5	23.40	500	470	2.00	2.20	2.00	0.35	0.31	0.07	3.10	0.22	0.08
17	10...	24.40	24.80	10...	24.5	24.40	500	470	2.00	2.20	2.00	0.35	0.31	0.07	3.10	0.22	0.08
18	10...	25.40	25.80	10...	25.5	25.40	500	470	2.00	2.20	2.00	0.35	0.31	0.07	3.10	0.22	0.08
19	10...	26.40	26.80	10...	26.5	26.40	500	470	2.00	2.20	2.00	0.35	0.31				

DEARBORN'S PATENT FIXTURES



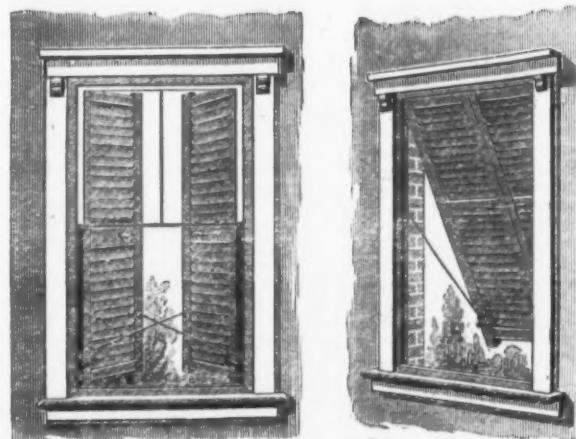
INSIDE VIEW.



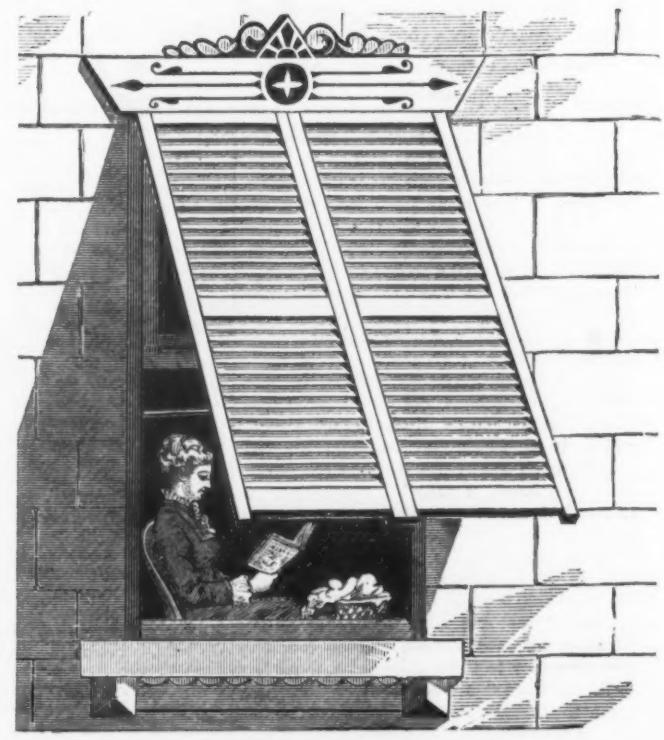
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These fixtures are now made larger and heavier, so as to fit Blinds of **Any Regular Size or Thickness**. They are heavily tinned to prevent rusting and insure easy working. Parts have been added, so that the Blinds may be adjusted readily to five different positions, **excluding the sun from any direction**. The Fixtures are made of **Malleable and Wrought Iron**, and are strong enough to hold any blind securely against the wind. They have been thoroughly tested for **three years**, and given perfect satisfaction to the thousands who have used them. Full illustrated directions with each set. War- ranted to work perfectly if properly applied. For Price List of Feb. 15, 1880, and full particulars, discounts, &c., address

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BOSTON, MASS.

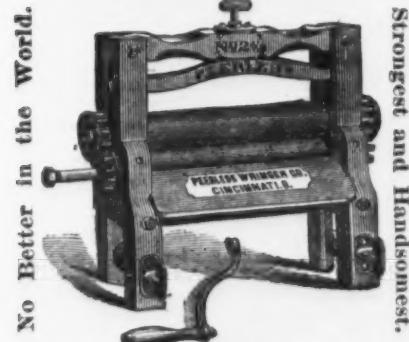
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PEERLESS
Clothes Wringers,
Sold by the Jobbing Trade everywhere.



Strongest and Handsomest.
No Better in the World.

Most Saleable Wringer in the Market.
TRY A SAMPLE ORDER.

PAT. "SCREW WINDOW BALANCES."
Retail Price, \$1 per window (four balances).

Liberal Discount to the Trade
Retain Medium and Light Window Sash at any point of opening, with the surplus holding the sash securely, available only required by drawing the adjusting screws. An acquaintance with the genuine merits of these goods, and their simple construction, will easily insure to them the favor of the user and applicator.

A mechanism always wanted, and easily applied, to windows as the common sash pulley, rendering the use of boxed frames, cords, pulleys, and other parts, a mere waste of hanging sash unnecessary.

Sashes are locked with a mortising rail lock, as with weights. Send for illustrated catalogue and postage free upon receipt of \$1.

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Post Office Box 32, Hartford, Conn.
For sale by BUTLER & HUNTING,
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No 35
1/4 x 1/2

BROWNING, SISUM & CO., 85 Chambers St.,
Manufacture
Belt Hooks, Cotters, Spring Keys, D Rings,
Simplies, and everything pertaining to wire bending.
Factory, BROOKLYN.



COVERT'S Patent Improvement in ROPE GOODS.

No more Splicing or Winding
Ends with Cord.

No. 1. Rope Halters, Horse Ties, Cattle Ties, Halter Leads, &c., made by clamping the lap with steel rings, as shown in cut. Also, clamping the end with a ring to prevent unbraiding.

This is all accomplished by machine, with a superior article costing much less than by hand work. We are now prepared to furnish the trade the cheapened and Improved Halters ever made. No. 1 illustrates the twisted and irregular form of the spliced Halter; also the insecure method of whipping the end with cord, which invariably comes off, and allows the rope to untwist. No. 2 illustrates the New Halter. It is made by clamping the laps with steel rings. The end is also secured with a steel ring, which will remain as long as the rope lasts.

We have also a full line of

COVERT'S HORSE AND MULE JEWELRY.

Illustration of various horse and mule harness items including snap hooks, snap links, and leather horse ties.

Consisting of Covert's Celebrated Harness Shape, Swivel Snaps, Open Eye Bit and Chain Snaps, Snap and Thimble for Horse and Cattle Ties, Rope Goods, consisting of Horse Ties, Cattle Ties and Halter Leads, Leather Horse Ties, Breast Chains, Halter Chains, Martingale Chains, Rein Chains, Post Chains, Post Rods, &c. These goods are far superior to anything of the kind on the market. They have from real merit become standard, and never fail to give entire satisfaction. They are sold by all leading jobbers in general and saddlery hardware at manufacturers' prices. Send for illustrated catalogue and price list. Address **COVERT MFG. CO.** Sole Manufacturers, West Troy, N. Y.

Delusion Rat and Mouse Trap,

Formerly manufactured by
CLAUDIUS JONES & CO.,
At Bridgeport, Conn.,
Have Removed to ERIE, PA.

This is the most successful Rat and Mouse Catcher on the market.
Send for Price List.

RODENT CATCHERS

THE TURNER & SEYMOUR MFG. CO.,
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Upholsterers', Stationers' House Furnishing & Fancy
HARDWARE AND NOTIONS.

We take pleasure in calling the attention of the trade to our
Improved Family Egg Beater.

It is made the same as our former Beater, except that we use parallel round wires in place of the flat wire. It is more easily cleaned than the flat wire beaters. It is equal to any beater in the world, while the price is very low. We guarantee that the Improved Egg Beater is not an infringement on the Dover, or any other beater.

Our **Cast Scissors and Shears** are superior in shape, variety and finish to all others. We have added to our former line a great variety of nickel-plated Scissors and Shears, Nut Picks, Nut Crackers, Fruit Knives, &c.

We respectfully solicit the privilege of giving estimates on novelties in Brass or other metals, and on small Iron castings.

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Shade Fixtures in great variety.
Picture Nails, Knobs, Hooks, Cord
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ALL KINDS OF

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Caution to Manufacturers of, Dealers in, and Users of Cross-Cut Saws and One-Man Cross Cuts:

Dealers in and Manufacturers of Saws, and Hardware Dealers generally, are hereby notified that the undersigned are the owners of the reissued Patent for Saw Handles, No. 8996, Nov. 18, 1879, original patent, Jan. 18, 1870.

Every Cross-Cut Saw having a handle, part of which, adapted to one hand, is above the blade, and part, adapted to the other hand, opposite the end of the blade, is an infringement of the said patent, and prompt legal proceedings will be taken against manufacturers of and dealers in saws provided with such handles.



The following is the claim on which we rely:

"In a cross cut saw, the combination of the saw-blade with a handle, part of which, adapted to one hand, is above the said blade, and part, adapted to the other hand, directly opposite the end of the said blade, all substantially as set forth."

HENRY DISSTON & SONS,

KEYSTONE SAW WORKS, Philadelphia, Feb. 17, 1880.

HOWSON & SON, Philadelphia and Washington, Attorneys for DISSTON & SONS.

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MINES: Lehigh Valley, Pa. WORKS & FURNACES: Bergen Port, N. J. The only Miners and Manufacturers of

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Hardware Specialties, SPRAGUE'S

"Perfection," "Combination" and other Razor Straps.

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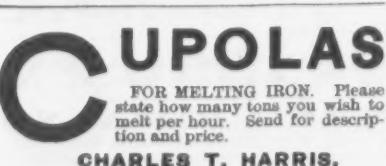

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A New and Important Invention.

The operation is by a presser lever, standard link-supporting ring, guide rods, a cup, convex bed performed. The lemon is cut in half, and the edges are spread out when pressed; this insures uniformity of pressure, breaking the cells of the lemon and extracting all the juice. A box of lemons can be squeezed in twenty minutes.

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"PINNACLE" SASH LOCK.

BURGLAR PROOF.

In locking, the arm is brought forward, and the spring bolt engages with the post in the back plate. In unlocking, the knob is pulled out, and the arm throws back, where it is held. Only one spring is used in the lock.

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Iron and Brass Wood Screws.

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Quality, finish and tests as to strength, guaranteed equal to any in the market.

With improved facilities and largely increased capacity for production, we can fill orders promptly, and invite inquiries for discounts.

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Manufactured by JAMES, AIKMAN & CO., No. 25 Cliff Street, New York. For Sale by W. W. Montague & Co., San Francisco, Cal.; Wm. Blairst & Co., Chicago; F. H. Lawson & Co., Cincinnati.



It is made of galvanized iron, circular in form, set on casters, wastes no room, and is light and easily moved. The exterior is painted in imitation of oak. The interior is arranged with rotary adjustable shelves, which can be regulated at pleasure. The double cylinder forming an air-tight chamber, in connection with the arrangement of the ice-chamber and the ventilator, makes the action of the Refrigerator perfect, and all the parts are so arranged as to be easily kept clean and sweet. The provision chamber, being under and separate from the ice-box, is free from ascending vapors. It is the only Refrigerator that imparts no taste or smell to its contents. It contains a water-cooler, furnishing ice-water without additional expense.

No.	Diameter.	Height.	Price.	No.	Diameter.	Height.	Price.
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10 inch.	\$14.00	16 inch.	\$22.00
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The lightest and easiest running Mower in the market. It is unequalled for simplicity, strength and durability. It is compact, thoroughly made and beautifully finished. Every Mower warranted as represented.

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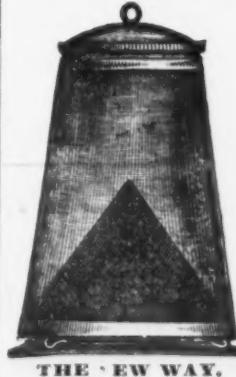
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We make Seven Sizes of Roller Mowers and Six Sizes of Side-Wheel Mowers. We claim for our Mowers

Perfect Work, Light Draft and Simplicity.

We have received many first premiums in competitive trials with other Mowers, both in this country and abroad. We have special patterns of Mowers for export, meeting the requirements of every market. Our new Horse Mower is conceded to be the *Lightest and Best* Horse Lawn Mower ever made. N. B.—*We make no inferior or second quality Mower*; Horse and Hand Lawn Mowers are alike guaranteed in all respects. Send for Illustrated Catalogue. Address



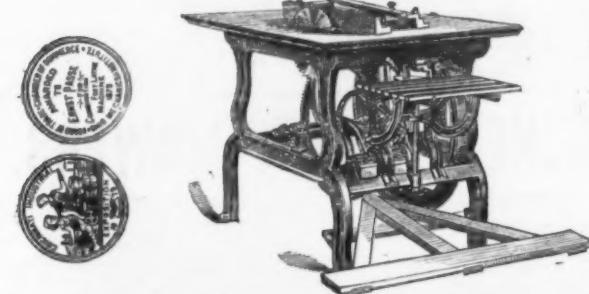
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CHAS. PASSE, Superintendent.

Universal Machine Works,
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Diameter of stone 20 in., \$5.00; 30 in., \$6.00. Price without stone.

Foot-Power Wood-Working Machines, for Manufacturers' Purposes, Iron Frames; Rip and Cross-Cut Saws, Scroll Saws, Boring Machines, Turning Lathes, Drill Presses, &c.

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The excellence of this superior stone cannot be too highly appreciated by Farmers and Manufacturers. The builders of Reaping and Mowing Machines readily admit and recommend that my Grindstone is best suited for sharpening the knives of such machines. It is portable, light, durable and fast cutting. The frame is made of solid wood, from hard wood, and every joint is bolted.

Carpenters, Stair Builders, Furniture Manufacturers and Butchers will do well to pay special attention to this tool. It is made for two stones; one for light work, the other for the heaviest grinding.

Parties having Frames and wanting Fixtures can get them on short notice.

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All Malleable Iron.
This tool is improved in every particular. It works by a double-headed screw.

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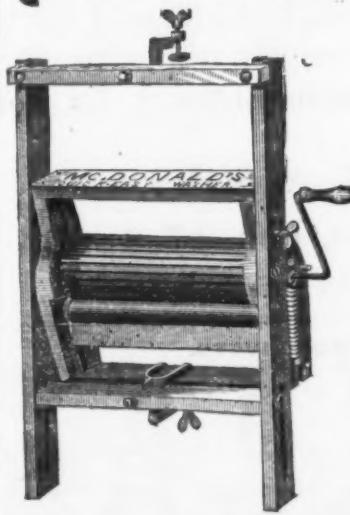
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QUICK AND EASY WASHER.

THE MOST THOROUGH
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SAVES THE LINEN,
SAVES SOAP,
SAVES TIME.
A Day's Wash can be done in two hours. It will fit all kinds and sizes of Tubs.

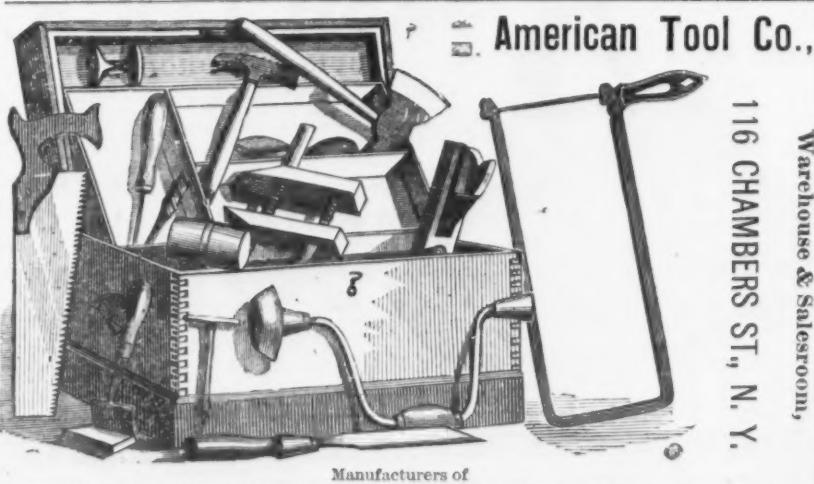
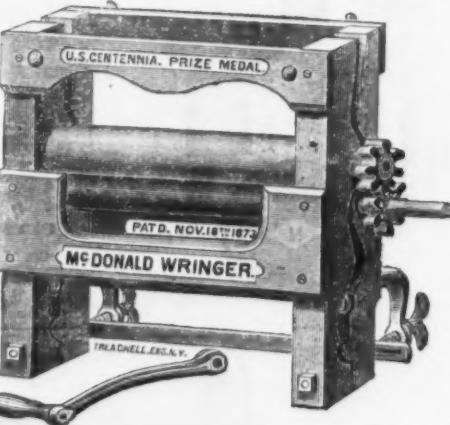
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Warranted Superior
TO ANY WRINGER
In the World.

IT SELLS ON SIGHT!

Address all inquiries and send all orders to
Graham & Haines
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Manufacturers of
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OF EVERY DESCRIPTION.

Fitted up with a superior quality of Tools, and adapted for the home and export trade. Illustrated descriptive catalogue furnished on application. Mechanics' Tools and Hardware specialties.

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Universal Lathe Dog.



It is very strong. Holds very strong. Will not deface finished work. Holds round, square or irregular work. Always stands up square with the work and will not "skew." Is more evenly balanced than the common dog. Send for circular.

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Hay Knives & Corn Knives.
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Lightning Screw Cutting
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Bolt Cutters for hand or power.

Lightning Screw Plates.

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" Bit Brace Reamers.

Green River Drilling Machines for hand or power.

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Tire Bolt Wrenches, Tire Wheels.

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Special Screw Plates arranged for use either with Stock or in Bit Brace, for Carriage Makers, Pump Makers and Stove Makers.

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Castle Hose Reel and Carriage.

Patented 1878.



CASTLE HOSE REEL CO., Cleveland, O.

The most perfect device yet invented for handling small hose.

The only adjustable Reel in the market. Write for discount.

Southwark Hardware Co.,
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Manufacturers of
FOUR GRADES OF
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400 and 600 lb.
PLATFORM
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EQUAL TO THE BEST AND LOWER
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OTHERS FOR MANUFACTURERS &
MACHINISTS.
SEND FOR CATALOGUE
182 SENeca St. CLEVELAND, O.

W. & J. TIEBOUT,

Manufacturers of

Brass, Galvanized & Ship
Chandlery Hardware,

No. 33 Chambers St., New York.

THOMAS MORTON,
65 Elizabeth Street, New York,
Manufacturer of Copper and Iron
SASH CHAINS,
With Patent Attachments.
Warranted for years. Chains of any size made to order, and trade supplied with liberal discount.



See our advertisement in *The Iron Age* first issue of each month.

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April 8, 1880.

THE IRON AGE:

19



or Ladies and Misses.

BY SPECIAL ACT

OF THE

46th

APPROVED

BY THE

PRESIDENT



For 1 inch Heel.

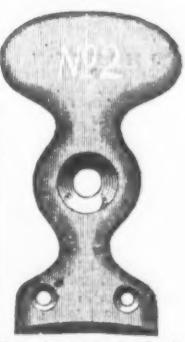


For Counter Stiffeners only.

CONGRESS,



April 1, 1880,



For 1 to 1 1/4 inch Heel.

LYON'S PATENT METALLIC HEEL STIFFENER.

The bill furthermore says that when said Letters Patent is corrected it shall be as good and valid as it would have been had it been issued in such corrected form.



For 1 1/4 inch Heel.

These Heel Stiffeners are being advertised in

OVER 1700 NEWSPAPERS,

And their sales are doubling every year.



For 1 1/2 inch Heel.



For 1 1/2 to 1 3/4 inch Heel.



For 1 1/2 to 2 inch Heel.

ALL TO WHOM IT MAY CONCERN:

Take notice, that on and after this date any one who shall

SELL, MANUFACTURE or USE

a Metallic Stiffener made to fasten to the side of the Heel by screws, nails or barbed tangs, and extending up against the counter to prevent it from bending or breaking over, or extending the same down to the bottom of the heel to protect it from wearing off unevenly,

Infringes on above Letters Patent,

and will be held responsible for full price of goods as below given, also damages and costs for collecting the same.

No. 00 and No. 1, per doz. pairs, 90 cts.

All other sizes, " " \$1.10

One gross, 144 pairs, - - \$12.50

Two gross, \$15.00 per gro., discount 20 per cent.

WM. H. KING,

of New York City,

ATTORNEY FOR NELSON LYON.

All infringements will be promptly prosecuted.



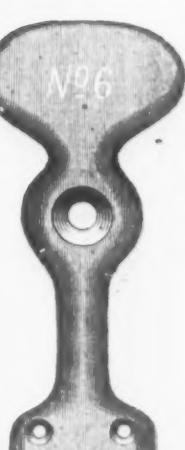
For 1 1/4 inch Heel.



For 1 3/4 inch Heel.



For 1 1/2 inch Heel.



For 1 1/2 inch Heel.

The above quantities will be required to be taken each time to get their respective discounts. Ten and 25 gross lots will be sold only to those who will sign contracts to keep above prices, and discounts for same will be given on application.

All goods must be marked "Patented July 9, '72," and all boxes containing same must be marked "Manufactured only by Nelson Lyon, Albany, N. Y., under Patents of July 9, 1872, May 18, 1875, July 11, 1876."

MANUFACTURED ONLY BY

NELSON LYON,
ALBANY, N. Y.

Experiments are in progress at the Holyoke Water Power Company's flume, to determine how much power is lost by transmission through gears and belts. In the regular turbine tests the dynamometer is placed at the end of the vertical shaft on which the wheel hangs, but in these experiments it is put at the most distant point to which the power is transmitted. The tests with gears are made with a pair of bevelled gears between the wheel shaft and the jack shaft, and a spur gear connecting the latter with what answers to the main shaft in a mill. Experiments are made first with one pair of gears and then with two, and finally with belts in the place of both. Then the wheel is tested in the usual way, and it is easily found how much power is lost and whether belts or gears take the most.

Special Notices.

COMMISSIONER'S SALE.

J. H. HILLMAN, Plaintiffs
THOS. T. HILLMAN, and on
GEO. S. WHARTON, ex parte petition.
Committee for DANIEL HILLMAN.

By virtue of a judgment rendered in the above-named cause, at the February term, 1880, of the Trigg Circuit Court (for the settlement of partnership), I will, on MONDAY, the 10th day of May, 1880 (being County Court day), at the front door of the Court House in Cadiz, Ky., sell to the highest bidder the Trigg Rolling Mill and lands attached, situated on the Cumberland River in Lyon County, Ky., and 20 miles from Eddyville and Elizabethtown and Paducah Railroad. The mill consists of the following machinery: one Plate Mill, 26 x 26; two High Rolls, driven by 6 x 20 Engine; one Steam Hammer, Cond'el's, 5 ton and 4-foot stroke; one Plate and Sheet Mill, 75 x 22; one 16-inch Bar Mill, train complete; one 9-inch Bar and Rod Mill; one 8-inch Bar and Hoop Mill; nine Puddling Furnaces; thirteen Knobbing Fires; fifteen Boilers; twelve Engines, large and small; Muck Train, Burden Squeezers, &c.; one Run-out Fire; seven Heating Furnaces; two Annealing Furnaces; seven pair Shears; one Steam Saw; one Testing Machine; Railroad Tracks and Scales; full sets of all tools needed; Storehouse, Office, Warehouse, dwelling and many workmen's houses, with about 200 acres of land, about 60 acres of which are in cultivation.

I will also, at the same time and place, sell the Trigg Furnace, situated about three miles from the Cumberland River and four miles from said mill, in Trigg County, Ky. Said furnace is a blast furnace, 46 x 18 feet high, 12 feet broad; sixty-pipe Davis Hot Blast; four Boilers; Horizontal Engine, 6 feet stroke, 20 inch diameter; furnace arranged for Cold or Hot Blast; one first-class iron smelting off-shaft Dwelling, and all necessary workmen's houses, &c., and about 450 acres of land, with about 60 acres in cultivation.

This property will be sold on the following terms: If the purchaser will pay in full, the lands will be sold together; a credit of one, two, three and four years will be given. If the machinery should be sold separate from the lands, the terms will be one-half the above credit, balanced in six and twelve months. The purchasers will be required to execute bonds for the purchase money, payable to the Commissioner in the nature of a reviving bond, at the rate of 6 per cent. per annum from date till paid, and a lien retained on the property for the purchase money.

J. H. HILLMAN, at Tennessee Rolling Mill, will take pleasure in showing the property to any one desiring to look at same.

CADIZ, KY., March 4, 1880.

THOMAS H. GRINTER,
Special Commissioner.

For Sale at a Bargain.

Factory property in Naugatuck, Conn., with water power; completely equipped for the manufacture of Cutlery, Shears, or other light metal goods. Thorough investigation invited. Apply to

TUTTLE & WHITTEMORE,
NAUGATUCK, CONN.

Bissell & Welles,
Wholesale Hardware Auctioneers,
33 Chambers and 65 Reade Sts., N. Y.

Sales held weekly for the trade. Consignments solicited. We refer to the leading Manufacturers and importers.

FOR SALE, CHEAP.

A Second-Hand 5-horse-power Portable Engine and Boiler (Economizer, built by Porter Mfg. Co., Syracuse, N. Y.); nearly new and in perfect order. For particulars, call on or address

THE RENZ HARDWARE CO.,
Bridgeport, Conn.

FOR SALE.

Stock of General Hardware, Store Building and good Dwelling connected. Situated in a small town, and one of the best grain markets in Ohio. Good opening for an energetic man. For particulars address

Lock Box 186, Canton, Ohio.

TRUSTEES' SALE OF VALUABLE IRON PROPERTY.—TWO CHARCOAL BLAST FURNACES, PORTER TURBINE AND 100-HP. PORTER AND A mortgage executed by James Woods, H. C. Yeatman and James Woods, Jr., registered in the Register's Office of Stewart Co., Tennessee, in book 24, page 100, on the 10th day of March, 1880, on the premises, for cash, on the 1st day of March, 1880, that very valuable iron property located in Stewart County, Tennessee, known as Cumberland Iron Works, and for washing fuller information will please address the undersigned, care of Third National Bank, Nashville, Tenn.

TEMPLE O. HARRIS, Trustees.
V. L. KIRKMAN.

SITUATION WANTED.—By Mechanical Engineer who has had upward of 25 years' experience as a Manufacturer of Iron and Steel, and an understand of the making of Machinery of almost every kind. Is thoroughly acquainted with Blast Furnace Machinery and fixtures, Rolling Mill, Nail Factory, and Bolt and Spike Works, in all their details, including the designing and erecting the works, also Mining Machinery of all kinds and the repairing of all the leading donkey pumps made. Best of references given.

Address: MECHANICAL ENGINEER,
Office of The Iron Age, 83 Reade St., New York.

FOR SALE,

Job Lots and Bankrupt Stocks Hardware.

Great bargains offered to the trade.

A. W. WHEELER,
141 Lake St., Chicago.

Special Notices.

FOR SALE.

The Salisbury Iron Manufacturing Co., of Virginia, situated nine miles from Finca, in Botetourt County, Virginia. There are on the property at the Furnace, several Houses, a Storehouse, Dry Kiln, Blowing Mill, with Shop, Stables, &c., all of which are owned by the property. The Furnace is in good order, having in the shed close to the furnace 20,000 bushels of Charcoal and 200 cords of Oak Wood, cut and stacked in cords on the property. The Ore Bed is four miles from the Furnace, and opened about 200 feet in the face of the mountain. Water is taken a mile on the side of the mountain, and falls down over the earth on the top of the ore bed, the mud and water passing through a creek into the James River. The ore in the bed is shoveled into a trough, or flume, with ripple bars, and a stream of the mountain water let in; before it reaches the bottom it is washed clean. Iron, acknowledged as good as the Salisbury for car wheels, has been made for eight years, and sold for car wheels to different parts around New York, but principally to A. Whitney & Sons, of Philadelphia, and Bouton & Co., of Chicago.

The property, besides having water communication with Lynchburg and Lexington, will have, within a few months, communication with the Chesapeake & Ohio R. R. at Clifton Forge, the Railroad now being built from Buena Vista, 10 miles, and runs along the James River, within half a mile of the ore bed. The property owns 300 acres of land, 200 of which can be and is mostly used for farming, the other 100 acres is covered with large oak timber. Timber land can be had for a few dollars per acre, or the wood at a nominal price. The late Jacob Dakin was the Manager and half owner of the property. Since his death, in 1879, the property is of little or no value security is offered, no money for years will be required.

It is offered for sale at a sacrifice by

EUGENE KELLY,
45 Exchange Place, New York,
or by COL PENDLETON,
of Buchanan, Va.

New York, March 22, 1880.

A. J. STEINMAN, Chairman. W. B. MIDDLETON, Supt.
W. G. MENDINHA, Secy & Treas.

OFFICE OF

PENN IRON COMPANY, Limited,

MANUFACTURERS OF

Merchant Bar Iron, Hammered and
Bolled Axles, Car Forgings, Bridge
Work, Fish Joints, Bolts, &c. &c.

Spikes, Bolt Ends, &c., &c., &c.,

LANCASER, PA.

WANTED.

A Shear for splitting old rails lengthwise, with
knives from 24 to 30 inches long. Address

PENN IRON CO., LIMITED,
Lancaster, Penn.

A Woodruff & Beach Beam Engine,

Low pressure, 48-inch cylinder, 84-inch stroke,
with fly-wheel pulley 20 feet diameter, 36-inch
face, and

Four Tubular Boilers,

60 inches in diameter, 20 feet long, and all connec-
tions practically as good as new.

For sale by

The Geo. Place Machinery Agency,
121 Chambers and 103 Reade St.,
NEW YORK.

JOHN R. WHITLEY & CO.,
European Representatives of First-
Class American Houses,

WITH

FIRST-CLASS AGENTS

IN THE

Principal Industrial and Agricultural
Cities and Centers of Europe.

TERMS ON APPLICATION.

LONDON, PARIS,
7 Poultry, E. C. 8 Place Vendome.

For Sale.

Stock of Hardware, Stoves, Implements, Tin-
ware Tools and Stock, in South Western Iowa.

Address Y,
Office of The Iron Age, 83 Reade St., New York

For Sale.

A Machine to Punch Axe Poles—Cohoes
Pattern, with Shop or State Rights.

Address "BOLTON,"

Office of The Iron Age, 83 Reade St., New York

For Sale.

A Pick and Mattock Machine to Punch
solid or lip Eyes, with Shop or State Rights.

Address "MILTON,"

Office of The Iron Age, 83 Reade St., New York

Wanted.

50 Horse Engine.

New or Second-hand, Corliss, Brown or Buckeye
make. Also Planer, 36x36 in., x8 feet.

STILES & PARKER PRESS CO.,
Middleton, Conn.

WANTED.—By the United States of a first-class
Adjustable Chain Pump Bucket, with
self-evident advantages. Can be adjusted to fit
the tube, and enlarged in case of wear, hence the
pump can be kept in good working order. Also
the entire Canadian High for sale or lease
on royalty. Address

THOMAS KENYON, Patentee,
Box 103, Hamilton, Ohio, U. S. A.

A PRACTICAL MAN, who has had over thirty
years' experience in making Steel in some of
the leading houses in England and America, is
open to an engagement. Good reference. Address

J. W. M.,
P. O. Box 194, Beaver Falls, Pa.

FOR SALE OR LEASE.

The Right of the United States of a first-class
Adjustable Chain Pump Bucket, with
self-evident advantages. Can be adjusted to fit
the tube, and enlarged in case of wear, hence the
pump can be kept in good working order. Also
the entire Canadian High for sale or lease
on royalty. Address

THOMAS KENYON, Patentee,
Box 103, Hamilton, Ohio, U. S. A.

Special Notices.

E. S. Wheeler & Co.,

54 CLIFF ST.,

NEW YORK,

OFFER

SPECIAL INDUCEMENTS

IN

QUALITY AND PRICE

IN

English

and

Scotch

Foundry

PIG IRON.

Valuable Property For Sale.

Charcoal Iron Furnace (hot blast), Ore
Banks, Chemical Works, Mills,
Dwelling Houses, Farming
and Wood Lands, in
Harford County,
Maryland.

This property, known as "The Harford Furnace and Chemical Works," containing upward of 5000 acres of land—nearly 1000 acres under cultivation, is situated on the head of Bull River, about one mile from navigation and about 10 miles from Rymanville Station. P. W. & H. R. in a healthy and desirable neighborhood. The furnace is in good condition, of 20 tons capacity per week, and could be started with very little delay. It has connected with it Ore Banks, Ore and Charcoal Kilns, Grist Mills, Storehouse, and all necessary dwellings, mills, implements and proprietors. It has also large substantial buildings for the manufacture of chemicals from wood by carburation. This property will be sold for less than one-third of its actual cost to the last owner. The terms will be made to suit purchaser. Address

EDWIN H. WEBSTER, Atty. at Law,
Belair, Harford Co., Md.

To Iron Manufacturers

The Rolling and Puddling Mills of the Hudson River Iron Co., on the Hudson River, in Poughkeepsie, will be sold at the Court House on the 17th day of April next. This property, with 82 acres of land, five large Tenement Houses, two good Docks, and large river front and valuable Mills, which cost, five years since, \$300,000, will be sold on that day. This is well worth the attention of iron manufacturers, as the location on the river and railroad renders the property very valuable, and the sale is absolute. Inquire of

W. S. JOHNSTON,
Poughkeepsie, N. Y.

For Sale.

Engine and Boiler, 35-horse power.

Shafting, Pulleys, &c.

Steam Hoisting Apparatus.

Also, a complete set of R. R. card making ma-

chinery. Apply to

GEORGE BAILEY,
290 Pearl street, Buffalo, N. Y.

DISCOUNT BOOK,

For Hardware Buyers, shows at a glance the
net of any discount or combination. Also contains
Computing Tables for quickly and accurately
reckoning discounts without multiplication.

Price, in Leather, \$1.00; in Cloth, 50 cents.

Address E. B. LEIGH,
St. Louis Elevator, St. Louis, Mo.

IVISON, BLOKEMAN, TAYLOR & CO., New York

THE NEWARK SCALE WORKS

FOR SALE.

with valuable patents and a large home and for-
eign trade. Cause of sale, old age.

Inquire at factory, 60 and 64 Railroad avenue,
Newark, N. J.

F. MEYERS.

Canadian Mines, Iron, Lead, &c.

Special Notices.
TO THE
HARDWARE TRADE.

In January last the firm of Clark & Co., manufacturers of Builders' Hardware, Buffalo, N. Y., was dissolved by limitation of partnership. The undersigned senior member and founder of said company withdrew his entire interest and management in the late company aforesaid, the remaining members agreeing to assume all debts and obligations contracted by the late firm.

C. B. CLARK.

C. B. CLARK, W. E. ANTHONY, E. G. COPELAND.

We shall in April begin the manufacture of Builders' and Miscellaneous Hardware, including

Clark's Patent Blind Hinges,
" " Gate Hinges,
" " Mop Heads,
" " Mop and Brush Holders,
" " Axle Pulleys,
" " Stove-Pipe Dampers, &c.

Also Clark's New Reversible Curtain Fixture.

Our Mr. C. B. Clark was the founder and senior member of the late Clark & Co., Buffalo, N. Y., and the patentee of the above well-known articles, which fact is a guarantee for the excellence of our goods, and we would respectfully solicit a share of your patronage.

C. B. CLARK MFG. CO.,

985 to 991 Atwater St., Cor Rivard,

DETROIT, MICH.

Our Illustrated Catalogue and Price List will be issued June 1st, 1880.

**GEO. P.
ROWELL
& CO.**

Newspaper Advertising Bureau,

For Ten Cents: One hundred page Pamphlet with Lists of Newspapers and Advertising Rates.

For Ten Dollars: Five lines inserted one week in Three Hundred and Fifty Newspapers.

10

**Spruce St.,
N. Y.**

ILLUSTRATED CATALOGUES
of my Patent

Bit Brace Wrench

are now ready. This tool possesses every advantage of the ordinary Bit Brace, and will also turn with rapidity Nuts and Bolts from $\frac{1}{4}$ to $\frac{1}{2}$ inches.

Q. S. BACKUS,
102 Chambers St., New York.

Splendid Investment.

The noted Carter's Furnace Iron property, in Carter county, East Tennessee, for sale \$12,000 per acre, is located in a valley, and has a magnificent water power, one five-ton cold blast charcoal furnace; best car wheel iron, now yielding large profit. Best New York and Tennessee references. For terms, address

HUNSDON CARY,
Room 12, No. 35 B'way, N. Y.,
or 8 Madison St., Memphis Tenn.

**ASTONISHING POWER
IN
PUNCHING & SHEARING PRESSES.**

See our illustrated advertisement on next to last page of this paper.

PEERLESS PUNCH AND SHEAR CO.,
52 Dey Street, New York City.

Machinery, Tools, Engines, &c., For Sale.

5 Side Lathes, 12 in. to ft. swing, 45-in. Bement Car Wheel Borer, 3 columns Drills; large Slotted, 16 in. stroke, 6 ft. table; Suspension Drill; lot of Steel Tools; 10-horse-power Andrews Engine; 20, 30, 50-horse-power Locomotive Boiler; 2 to 10-horse-power upright engines; vertical Engine; 10-horse-power Horizontal Engines; 2 to 10 diam. cyl.; Steam Pumps; No. 6 to 10; Pulsometers; No. 1 to 10; Siphons, all sizes; Rock Drill and Portable Engine; Rolling Machinery.

A. G. BROOKS & WINEBRENER,
261 North Third St., Philadelphia.

Wanted.

A situation as Clerk, Porter, or in any capacity where steady employment could be secured by a respectable and competent young man. Is thoroughly familiar with the General Hardware business, and can furnish satisfactory references. Address

F. A. W.

Office of *The Iron Age*, 83 Reade St., N. Y.

**To Capitalists and others Seeking
Manufacturing Sites.**

The Parnassus, Pa., Industrial Association offers liberal inducements in land and cash to parties who will locate manufacturing establishments in their town. Natural Gas, Coal and Iron Ore in immediate vicinity. Address

PARNASSUS INDUSTRIAL ASSOCIATION,
Parnassus, Westmoreland Co., Pa.

WANTED.—Consignments of small Engines and Boilers, Screw Cutting, Foot and Power Lathes, and other machinery, as well as general hardware, on commission, by a responsible firm in New York, having a machinery store in first-class location. Address

P. O. Box 1012, New York City.

Special Notices.
TO WHOM IT MAY CONCERN.

The undersigned have adopted the following symbols, viz., **1878 A**, **1878 B**, **1878 C**, **1879 A**, **1879 B**, **1879 C**, **1879 D**, **1879 E**, **1879 F**, **1879 G**, **1879 H**, **1879 I**, **1879 J**, **1879 K**, **1879 L**, **1879 M**, **1879 N**, **1879 O**, **1879 P**, **1879 Q**, **1879 R**, **1879 S**, **1879 T**, **1879 U**, **1879 V**, **1879 W**, **1879 X**, **1879 Y**, **1879 Z**, as designating symbols for certain styles of Table Cutlery manufactured by THE JOHN RUSSELL CUTLERY CO., and by their use of the same heretofore to designate particular grades and styles of goods, they have acquired a property in the same for such purpose as Trade Marks at common law.

Manufacturers of and dealers in Cutlery are cautioned against making use of any of said symbols to designate Cutlery, either by putting such marks and numbers on Labels or Invoices, or by stamping the same on manufactured goods.

JOHN RUSSELL CUTLERY CO.

By R. N. OAKMAN, Jr. Treas.

Turners Falls, Mass., March 31, 1880.

For valuable considerations we have licensed the following named companies to use the designating symbols above mentioned:

LANDERS, FRARY & CLARK,
LAUREN & GOODMAN MANUF'G CO.,
MERIDEN CUTLERY CO.,
BEAVER FALLS CUTLERY CO.,
AMERICAN CUTLERY CO.

John Russell Cutlery Co.,

By R. N. OAKMAN, Jr. Treas.

TO WHOM IT MAY CONCERN.

The undersigned have adopted the following symbols, viz., **1878 A**, **1878 B**, **1878 C**, **1878 D**, **1878 E**, **1878 F**, **1878 G**, **1878 H**, **1878 I**, **1878 J**, **1878 K**, **1878 L**, **1878 M**, **1878 N**, **1878 O**, **1878 P**, **1878 Q**, **1878 R**, **1878 S**, **1878 T**, **1878 U**, **1878 V**, **1878 W**, **1878 X**, **1878 Y**, **1878 Z**, as designating symbols for certain styles of Table Cutlery manufactured by LANDERS, FRARY & CLARK, and by their use of the same heretofore to designate particular grades and styles of goods, they have acquired a property in the same for such purpose as Trade Marks at common law.

Manufacturers of and dealers in Cutlery are cautioned against making use of any of said symbols to designate Cutlery, either by putting such marks and numbers on Labels or Invoices, or by stamping the same on manufactured goods.

LANDERS, FRARY & CLARK,

By C. S. LANDERS, Treas.

New Britain, Conn., March 31, 1880.

For valuable considerations we have licensed the following named companies to use the designating symbols above mentioned:

JOHN RUSSELL CUTLERY CO.,
LAUREN & GOODMAN MANUF'G CO.,
MERIDEN CUTLERY CO.,
BEAVER FALLS CUTLERY CO.,
AMERICAN CUTLERY CO.

Landers, Frary & Clark,

By C. S. LANDERS, Treas.

A Stock of Hardware For Sale.

Value, \$20,000.

Parties wishing to buy can arrange to carry on the business.

T. VOUGHT,

Station A. P. O., New York City.

For Sale.

Large Slotted, 16 in. stroke, 6 ft. table, adjustable stroke, cross and end feed and circular feed, weight about 8 tons, double column, good order, price low. Car Wheel Borer, Bements', 48 in. table, 20 in. x 10 ft. Wood, Lights & Co. Lathe, 2-ton chain Block, double length chain.

A. G. BROOKS & WINEBRENER,
261 N. 3d St., Phila., Pa.

Wanted,

A No. $\frac{1}{2}$ Power Blower, either "Roots" or "Baker" make. Must be in perfect order, and cheap for cash. Address

GEO. M. RICE, 2d, 419 Main St., Worcester, Mass.

BLOWING ENGINE FOR SALE.

Air Cylinder, 4 ft. x 4 ft.; Steam Cylinder above. Address

CAMDEN IRON WORKS,

CAMDEN, N. J.

FOR SALE, CHEAP.

One Horizontal Engine, about 14-horse power, nearly new; with Tubular Boiler, Blower, Hot Well, Steam Pump and everything complete. For particulars, apply to

L. B. CURTIS,

Red Hook, N. Y.

WANTED,

A Large Facing and Boring Mill.

Address

LOCK BOX D,

P. O., Camden, N. J.

OILSTONES.

Washita Stone, No. 1, per lb., 15 cents net.

" " " 2, " 13 "

" Slips, " 1, " 30 "

Best in market.

BOYD & CHASE,

East 10th St., New York.

WANTED.

The machinery and fixtures of a first-class boiler shop. Address

C. C. PECK,

P. O. Box 1219, New York City.

FOR SALE.

A works completely equipped for the manufac-

ture of Carriage Axles. Is well located in relation to coal and iron, also very accessible to market.

Address

E. P. BULLARD,

14 Day St., New York.

WANTED.

A situation as Clerk, Porter, or in any capacity

where steady employment could be secured by a

respectable and competent young man. Is thor-

oughly familiar with the General Hardware busi-

ness, and can furnish satisfactory references.

Address

F. A. W.

Office of *The Iron Age*, 83 Reade St., N. Y.

DESIGNED AND BUILT TO ORDER.

Improvements made. Ideas worked out.

Foreign orders a specialty.

RICHARDS & DOLE,

Springfield, Mass.

FOR SALE.

The following were the closing quotations of active shares:

Rad. Asked.

American District Telegraph..... 75 1/2 74 1/2

A. T. & T. Atlantic Telegraph..... 45 1/2 42 1/2

Boston Water Power..... 14 1/2 15 1/2

Burlington and Quincy..... 14 1/2 14 1/2

Canada Southern..... 50 3/4

Trade Report.

Office of THE IRON AGE, 1
WEDNESDAY EVENING, April 7, 1880.

The financial markets have been moderately active since our last review. Proposals to sell United States bonds to the sinking fund were opened at the Sub-Treasury to-day. The amount offered was \$5,254,200, of which the Secretary of the Treasury accepted \$1,500,000.

The importations of specie and bullion for the week ending April 2, amount to \$8129, including \$2946 gold and \$5183 silver. Since the 1st of January the importations reach \$2,644,744, consisting of \$1,262,297 gold, \$1,381,428 silver and \$1019 brass and copper coin. From the 1st of August, 1879, to April 2, 1880, there has been a total importation of \$80,652,095, of which \$76,401,849 is gold and \$4,249,177 silver.

In the local money market the ruling rate for call loans has been 6%; exceptional loans being made as high as 6 1/2%, in addition to a commission of 1% of 1% per day, and as low as 4 1/2% per annum. The closing quotation was 4 @ 5 1/2%.

United States bonds have been strong, and advanced 1/2 @ 1/2%. The latter were the

consumptive capacity, which being reached, prices may be expected to settle down in proportion to the cost of production. The trade has probably now reached a point at which a new basis of values will have to be fixed, and if figures are made low enough to keep out foreign Iron, a steady, active trade may be fairly expected throughout the whole year. Manufacturers would probably do well to follow the example of the furnace proprietors, instead of issuing a card at one price and privately taking orders at a lower rate. Quotations at this writing are entirely nominal, 3.0¢ is said to be the base, but it is not unlikely that 3.4¢ or less will be the ruling rate in the course of the week.

Steel Rails.—Prices are again lower, and sales during the week have been made at \$75 at mill. These, however, are said to have been for lots held in second hands, but at \$78 @ \$80 at mill orders could be placed with manufacturers direct. The demand is not specially urgent, although there would not be much difficulty in finding buyers if the mills were in a position to make early deliveries. Futures are a little easier, however, and, in sympathy with the general market, prices have a downward tendency.

Iron Rails.—A few sales have been made at about \$63, but prices are again weaker, and parties in need of orders to fill up at once would probably make sharp concessions. The prospect for a heavy demand continues good, and it is said that large orders will have to be given out at an early date. In the meantime, we quote \$63 @ \$65 as the asking rate, but the market looks weak and likely to be lower before much business can be done.

Old Rails.—The market continues dull and heavy, with a gradual settling down in values. Sales during the week have been on a somewhat larger scale than for some time previous, and there is an idea that at present prices there is not much risk in carrying stock. Small lots have been sold at \$38, but we hear of larger parcels down to \$36, with \$37 as an average price. Market quiet.

Scrap Iron.—The market is very dull and prices are again lower. Wrought is offered at \$37 @ \$38, and Cast at \$26 @ \$28.

Nails.—Unchanged at \$5.40, less usual trade discount.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue, Pittsburgh, Pa., April 6, 1860.

The situation, so far as relates to general business, has not changed much during the past week, while the weather is all that could be desired for the growing crops. The roads continue in very bad condition, and trade, in all its varied departments, is more or less restricted in consequence. The "lull" in the Iron business continues, but an early improvement is confidently looked for. For Window Glass and Coke there is no apparent abatement in the demand, and it is probable that there will be a revival in that important Pennsylvania interest—petroleum—before long, as the export usually commences to open up this month. In a word, while general business at the moment is not what it was expected it would be, there is no reason to be discouraged, as the indications generally point to a good healthy spring and summer trade.

Pig Iron.—While dullness is still the order of the day, it is certain that the long looked for and much hoped for improvement is nearer at hand than it was a week ago. Stocks in the hands of consumers are steadily being reduced; the consumption continues large, as the puddling furnaces are nearly all in full blast, and it is reasonably sure that some consumers will soon be obliged to replenish their stocks or shut down their puddling furnaces. Gray Forge Irons may be quoted as follows: Cold-short, \$30 @ \$35; 4 mos., as to quality; Neutral, \$36 @ \$38; Red-short, \$40 @ \$42; Foundry Irons, \$40 @ \$43.

Manufactured Iron.—There has been no important change in the situation during the past week; business continues very slow as compared with that of December and January; orders are not coming forward as freely as usual at this particular time, and prices continue irregular and unsettled.

True, the card remains unchanged at 4¢, but orders are being booked at 3.70¢ @ 3.60¢, and it is said, as low as 3.50¢.

It is now very generally admitted that the advancing of the card from 3.50¢ to 4¢ in February, was a mistake, as in addition to curtailing the demand it increased the cost of skilled labor, and, indirectly though it may be, assisted to put up the price of coke, coal and pig iron, and there is no question but the enhanced cost of Iron has had much to do with curtailing the consumption. To illustrate this, we hear of a contemplated Iron bridge across one of our Western rivers, the plans and specifications for which had been prepared, having been abandoned, and a wooden one substituted, as the cost of the former would have been so much greater than that of the latter. Moreover, as stated in our last report, many of the largest buyers bought heavily during the excitement in the fall and early part of the winter, before prices got up to the highest point, largely anticipating future wants, the result of which is now being experienced. It is rumored that a meeting of the Western Iron Association is to be convened here in a few days. The main object will be to reduce the card to about actual selling prices. It was thought at the last meeting, when the four-cent card was reaffirmed, that it could be maintained, but the subsequent course of the market has demonstrated that it could not be done; hence the determination to take the back track and thereby reduce the price of labor.

Nails.—At an adjourned meeting of the Western Nail Association on last Wednesday, it was agreed to prolong the suspension of the factories in the West two weeks longer, by which time it is confidently expected that there will be an active demand. The great object sought after in the suspension is to keep down stocks in first hands until the spring trade—which has been delayed by the bad weather and bad roads—fairly opens up, and, at the same time, to give jobbers and speculators—who were selling below the card—a chance to unload. Manufacturers will refuse hereafter

to sell any round lots to speculators, for the reason that the latter are very often the cause of the demoralization of the market when there is no occasion for anything of the kind. In first hands, both here and at Wheeling, the two great sources of supply, stocks are very meager, and just as soon as the speculative lots are disposed of, the market will be in better shape for the producing interest than it has been for some time. Since the above was written we learn that a circular has been sent out from Pittsburgh by a broker offering Wheeling Nails in car-load lots at \$4.75 net cash, which may create the impression that Wheeling manufacturers are offering through brokers below the card, which is not the case. The Nails in question are owned by a speculator, and as it is a small lot, will soon be disposed of. The manufacturers at Wheeling, as here, are stiff at the card, and we are reliably informed that some of the jobbers are urging the manufacturers to advance prices.

Railway Supplies.—The demand for almost everything in this line is meager, but an increased business is expected within the next week or two, when orders, it is thought, will commence to come forward pretty freely. Railway spikes are still quoted at 4.5¢ for 30 days, and Spikes Bars at 3.9¢.

Wrought Iron Pipe.—Business continues a little slow, but an early improvement is looked for, and there is every indication of a big summer trade. Prices easier, but unchanged. Discount on Gas and Steam Pipe, 35 @ 40%; on Boiler Tubes, 5 and 5%; Oil-well Casing, \$1, net; ditto Tubing, 35¢, net.

Horse and Mule Shoes.—There is a moderate business for the season at unchanged prices: 100-kg lots, delivered free on board cars or boat, \$6 for former and \$7 for latter.

Rails.—There have been no sales of Steel Rails reported here for some time and prices may be quoted, nominally, at \$80, cash, delivered at mill. The Superior mill is still working on a 10,000-ton contract for the Denver and Rio Grande Railroad. Old Iron Rails quoted at \$43 @ \$44.

Muck Bar.—Continues dull, with the supply increasing, as some of the mills have commenced to pile up, and prices are easier in consequence—may be quoted at \$53 @ \$60.

Steel.—There is considerable inquiry for all kinds of merchant Steel for immediate delivery, and the mills are all pressed with business, and prices are maintained.

Scrap.—There is still some inquiry for Old Car Wheels, but all other kinds of Scrap Iron are dull, and prices little better than nominal. We quote as follows: No. 1 Wrought, \$40 per ton net; Wrought Turnings, \$30 @ \$32; Old Car Wheels, \$40 @ \$50, gross; Old Car Springs, \$40 per ton, \$45; no. 2 Car Axles, \$48 @ \$50; Cast Boring, \$25 @ \$28, gross.

Window Glass.—There is a continued good demand, and prices are firm, but unchanged. Discounts for car-load lots, 50% on single and 60% on double strength; single, in a jobbing way, 10 and 10%; manufacturers generally refusing to make any large contracts for future delivery.

Coke.—The demand has fallen off somewhat, and prices are easier. We now quote at \$4.50 @ \$5 per ton, delivered free on cars at ovens for near-by delivery, and \$4 for future delivery.

Coke.—Shipments are still being made almost daily by river, and as all the down-river markets are oversupplied, business is in an unsatisfactory condition, and operators generally would like to see the river get down low enough to shut off shipments for a couple of months.

Petroleum.—There is nothing new to report in regard to this important interest. Prices, both for the raw article and the product, continue very low, with but little prospect of any immediate improvement. The great drawback is the large production and unprecedented visible supply of Crude, which is estimated at between 9,000,000 and 10,000,000 bbls.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts., Chattanooga, April 5, 1860.

The warm and forward weather has stimulated the opening of spring business in general trade a month in advance of usual seasons. General trade in all lines, manufacturers included, has been very brisk during the week. The weather has been decidedly warm, with heavy rains on Friday night and Saturday morning.

Pig Iron.—Sales of Pig have been heavy during the week, mostly at considerable concessions on our last figures. Foundries in the immediate district have been liberal buyers at figures below. We quote: Coke and Charcoal Foundry, \$33 @ \$35; Gray Forge, \$29 @ \$30; White and Mottled, \$20 @ \$28; Car Wheel Metal, \$40 @ \$45.

Muck Bar, &c.—No Muck Bar in market. The glut of Scrap has stopped the movement of that article. The mills are heavily loaded with it, and will work down their stocks before purchasing more. Wrought Scrap is nominal at \$18 @ \$25, according to quality. Cast Scrap, \$12 @ \$22, according to make. Old Car Wheels, \$35 @ \$38.

Ores.—The market is abundantly supplied. We have no change to note. Brown Hematite, 50 @ 55% per ton, \$2 @ \$2.75 per ton; Red Fossil, \$2 @ \$2.25, on cars or on wharf from flat boats.

Nails.—The market here continues steady. Jobbers have in some instances cut rates slightly, but none of the mills are taking orders below \$5.25 rates.

Manufactured Iron.—Prices continue rather steady on account of jobbers making lower rates than the mills are willing to meet. We quote Bars, \$3.50; Railroad Spikes, \$4; Track Bolts, \$5; Trestle Bolts, \$5.50; Fish Plate, \$3.50.

Coal.—Coal in good supply for manufacturers use. We quote run of mine at \$1.75 @ \$2; Lump, 10¢ @ 12¢ per bushel, delivered.

Coke.—The demand is fully equal to the supply, and prices firm. We quote Furnace

Coke at \$3 per ton, on cars in the city; Foundry, 10¢ @ 12¢ per bushel.

Steel and Iron Rails.—Iron Bars have somewhat sympathized with the Pig Iron market. We quote them at \$60 @ \$65, in heavy and light sections. Steel Rails, \$30 @ \$32; Light T, \$75 @ \$80.

Old Rails.—The supply of Old Rails is better than for some time. Spring renewals of tracks began earlier than usual. We quote them rather dull at \$38 @ \$40.

BOSTON.

MARCH 3.—The Iron market presents about the same features as noted last week. There is almost an entire absence of business, and concessions are offered by many holders without any apparent effect. But, on the other hand, makers appear to be sanguine of the maintenance of present rates, and we cannot quote *American Pig Iron*, f. o. b., at the shipping port, at less than \$38 @ \$40 for No. 1 X; \$37 @ \$38 for No. 2 X, and \$35.50 @ \$36.50 for Gray Forge. In the mean time the importations of foreign Iron continue very large. The imports of Scotch and English Pig Iron at this port the past week have included: 220 tons from Liverpool by the Samaria, 200 tons by the Massachusetts, 200 tons by the Victoria, 600 tons from Glasgow by the Austrian, 100 tons from London by the Hooper, and 100 tons from West Hartlepool by the Pierremont, a total of 2320 tons. Other metals have recovered the greater part of the loss resulting from the scare of last week. Copper closes at about 22 1/4¢, with a firmer feeling resulting from advice of an advance of £1 in the English market. Lead closes firm at 5 1/4¢. Spelter is quiet and steady at 6 1/4¢ @ 7¢. Tin has improved in tone as a result of the reaction in the London markets, and large lots of Straits are not available under 21 1/2¢. —*Commercial Bulletin.*

CINCINNATI.

MESSRS. E. L. HARPER & CO., under date of April 5, write as follows: No decided changes have marked the course of events. The quiet, but steady, tone which has prevailed for some time still continues. Buyers and sellers have caused mutual surprise at the length of time they have both been able to remain out of the market. With the exception of a few furnaces, making low grades and weak Iron, sellers are generally resting quietly and filling orders previously booked. The Alice Furnace, one of the largest stacks tributary to this market, has blown out, and will probably remain idle for some time. There is a fair and gradually increasing demand for Manufactured Iron and all the mills are running full. Among other important transactions, we note a sale of 1000 tons Plate Iron by the Swifts Iron and Steel Works to the Hall Safe and Lock Company. Large inquiries for new Rails are beginning to come in, and have already resulted in some good-sized orders during the past week, at about \$70, cash, here, for Iron Ts. Old Rails have also been in decidedly better request, some good-sized blocks changing hands:

HOT BLAST FOUNDRY.

4 mos.

Hanging Rock, C. C. No. 1	\$40.00 @ 37.00
" No. 2	38.00 @ 36.00
" No. 3	35.00 @ 32.00
" Mottled and White	32.00 @ 30.00
Charcoal C. B. Blooms	95.00 @ 97.00
" Billes	95.00 @ 100.00
Refined Blooms	80.00 @ 85.00

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows under date of April 5: Manufactured Iron has declined, but otherwise last week's quotations stand. Considerable business is doing and market is firm.

Scotch Pig Iron 28.00 @ 17.00
American Scotch Pig Iron 40.00 @ 32.00
American No. 1 38.00 @ 40.00
" No. 2 37.00 @ 39.00
" No. 3 35.00 @ 37.00
Mottled and White 32.00 @ 36.00
Cold-blast Charcoal 59.00 @ 61.00
Warm-blast Charcoal 43.00 @ 45.00
Wrought Scrap No. 1 16.00 @ 18.00
Cast Scrap Machinery 27.00 @ 28.00
Richmond Refined Bar Iron, Stand'd 93 1/2 @ 94 1/2
Horse Shoes, Tredgar 5.50 @ 5.50
Mule 6.50 @ 6.50
Old Dominion Nails, (standard size) 5.30 @ 5.40 according to size of lots.

Freights to New York, \$2.00 for 220 lbs. by sail.

HOT BLAST CHARCOAL.
Missouri \$45.00 @ 42.00
Southern 37.00 @ 39.00
Hanging Rock 40.00 @ 43.00
COKE AND COAL.
Missouri None offering
Southern 37.00 @ 38.00
MILL IRONS.
Cold-short 33.00 @ 35.00
Red-short 40.00 @ 42.00
CAR WHEEL IRONS.
Missouri 50.00 @ 55.00
Southern 55.00 @ 58.00
Ohio 55.00 @ 60.00
IRON ORE.
One for fix 12.00 @ 15.00
For furnace 7.50 @ 8.50

BALTIMORE.

W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of April 5: Trade for the past week has ruled quiet and unchanged, with annexed quotations nominal and weak:

Ref. Bar Iron, 1 to 6 by 1/4 to 1 to 2. P. D. 3 8-10 @ 42 1/2
" 1 to 1 1/2 by 1 1/2 to 2. P. D. 3 8-10 @ 42 1/2
and Square. P. D. 3 8-10 @ 42 1/2
Hoop Iron, 1 1/2 wide and upward. P. D. 4 1/2 @ 45 1/2
Band Iron, from 1 1/2 to 4 in. wide. P. D. 4 1/2 @ 45 1/2
Horse-shoe Iron 4 1/2 @ 45 1/2
Norway Nail Rods 6 1/2 @ 65 1/2
Black Diamond Cast Steel 13 1/2 @ 14 1/2
Machinery Steel 9 @ 9 1/2
Cast Spikes Steel 10 @ 11 1/2
Common Horse Nails 10 @ 11 1/2
Perkins' Horse shoes, P. D. 100 lbs.
" Mule shoes 10 @ 9 1/2 @ 10 1/2
and 1/2. Round and Square. P. D. 3 8-10 @ 42 1/2

Putnam Horse Nails P. D. 21 22 23 24 25
Globe Horse Nails P. D. 20 21 22 23 25
Railroad Spikes 4 1/2 @ 4 1/2
Less list discount to the trade.

R. C. HOFFMAN & CO., Iron and Commission Merchants, report the Pig Iron market as follows under date of April 5: We have little change to report in the Iron market. The demand is moderate and prices about as follows:

Baltimore Charcoal Wheel Iron \$38.00 @ 36.00
Virginia 38.00 @ 36.00
Anthracite No. 1 37.00 @ 38.00
" No. 2 36.00 @ 37.00
" No. 3 35.00 @ 36.00
Mottled and White 32.00 @ 33.00
Charcoal C. B. Blooms 95.00 @ 97.00
" Billes 95.00 @ 100.00
Refined Blooms 80.00 @ 85.00

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows under date of April 5: Manufactured Iron has declined, but otherwise last week's quotations stand. Considerable business is doing and market is firm.

Scotch Pig Iron 28.00 @ 17.00
American Scotch Pig Iron 40.00 @ 32.00
American No. 1 38.00 @ 40.00
" No. 2

and considerably small and below the production, I fail to see the most remote reason for warranting another rise. I am neither a maker, user, vendor nor buyer of iron, so that I claim to be disinterested in my motives. That being the case, I should certainly deem a rise in bars at the quarterly meetings absolutely unjustifiable and as a "try on" quite unworthy of those who, instead of being the indirect promoters of speculation and unhealthy inflation, ought to endeavor by every possible means in their power to keep the trade on a secure, sound and legitimate basis. It is quite within the power of half-a-dozen houses (at the most) to do this, and as in that number there are included Lord Dudley, William Barrows & Son, Robert Heath & Sons, Philip Williams, &c., the result ought not to be, but is, doubtful. One influential gentleman is understood to clamor for at least 10^o more at just before quarter day, and there is the chance—perhaps a stronger word would fit better—that his views will prevail.

SCOTCH PIG IRON

has been irregularly dull throughout the week, notwithstanding the existence of data which had led some persons to form the opinion that something of recovery would not have been unlikely toward the end of last week. In point of reserve stocks the returns are better, the stock held by Connal & Co. to-day being 441,041 tons, as against 229,799 tons last year. During the week the quantity held has decreased to the extent of 2356 tons, but, as I mentioned last week, this may have been caused by makers' abstention from sending iron into store, preferably keeping it within their own premises. Shipments last week are shown by John E. Swan & Bro.'s circular to have been 20,985 tons (16,612 tons to foreign ports), an increase of 10,743 tons over the total for the corresponding week of 1879. The total growth of shipments to date has been 56,332 tons, on a total this year of 145,561 tons. Most of the additional tonnage has gone to foreign destinations, but more also has been sent coastwise, which would seem to indicate that English consumers are manifesting a renewed preference for Scotch brands. The imports from Middlesbrough into Grangemouth last week declined to the unprecedentedly small total of 660 tons, a decrease of 4420 tons from the same week of last year. This drop leaves the net increase for 1880, in this respect, 1774 tons only. Ballast pig is still held at 576 @ 60^o, delivered alongside. Writing from Glasgow, March 2, John E. Swan & Bros., Limited, give the following quotations:

	No. 1.	No. 3.	No. 4.
Gartshore	67/6	67/6	67/6
Coltness	69/	64/	64/
Langloan	69/	60/	60/
Shotts, Ordinary	67/	63/	63/
Cairnhill	67/	59/	59/
Summerlee	67/6	58/6	66/
Chapelhall	65/	60/	66/
Carnbroe	65/	60/	66/
Clyde	62/	57/	61/
Quarter-Clyde	61/6	57/	61/
Govan	61/6	57/	61/
Monkland	61/6	57/9	61/
Glenarnock	67/	60/	66/
Ardeer	67/	60/	66/
Eglinton			
Larkhall			
Muirkrich			
Portland			
Dalmeny	61/	56/	61/
Carron, Selected	70/	56/	61/
Carron, Ordinary	65/	64/	64/
Almond, Export	67/6	57/	61/
Almond, Home use	61/6	57/6	61/
Kinnel	57/6		

CLEVELAND PIG IRON

is rather weaker in a general sense, and is now held at the appended figures, all net cash, for G. M. B., f. o. b. in Ties:

No. 1 Foundry	62/6	No. 4 Forge	56/
2 " "	59/	56/	56/
3 " "	55/	White	56/
4 " "	55/	Kentledge	56/

At these prices the trade seems to be on a sound basis, notwithstanding the smallness of the current shipments from Middlesbrough into Scotland. Last week's exports from the Tees included 1700 tons of steel blooms to Philadelphia. These, I believe, were shipped by Bolckow, Vaughan & Co., who are among those who display the nicest appreciation of the wants of your market. There went also a cargo of pig to New York. Other American orders are said to be on hand unexecuted, chiefly by Bolckow, Vaughan, Bell Bros. and W. Whitwell & Co. At Eston the new Thomas-Gilchrist plant is being pushed forward and will shortly be ready for use, when we shall see what we shall see.

FROM SHEFFIELD

I hear somewhat varying accounts, especially from those who are engaged in the lighter industries. The cutlery manufacturers appear to be doing less work in several quarters, the only houses which are at all active being those (such as Rodgers, Harrison Bros., George Wostenholms, Brookes & Crookes, and a few others) who cultivate special markets or departments. The general cutlers are not at all busy, nor do I gather that much is being done by the electroplaters and certain other manufacturers of light articles. In the steel cutlery lines somewhat of a controversy has arisen on the subject of the use or nonuse of Bessemer steel for the blades. A correspondent of the *Ironmonger* made the assertion, on the strength of an informant in the trade, that "50 per cent. of the cutlery now made in Sheffield is of Bessemer steel." This statement was, no doubt, rather too strong as it stood, and some discrimination should have been used as to the class of cutlery called in question. The matter does not appear to have been noticed for a time, but at length more or less indignant contradictions have appeared. One gentleman, however, Mr. W. Allen (who is, I believe, brother-in-law of Sir Henry Bessemer and manager of the company which bears his name at Sheffield), has since written to a local journal, declaring that although the *Ironmonger*'s correspondent was, no doubt, wrong as to the precise percentage, yet that a very large quantity of Bessemer material is being so used, and not for cutlery alone, but for hundreds of other purposes. The *Ironmonger* seems to treat the matter as a mere quibble, not altogether free from a ludicrous tinge, but broadly maintains that Bessemer steel not only has been, but is being very largely

made use of for cutlery purposes. Of this fact, I presume, there can be no doubt. Anybody who has been much among the steel works, and knows anything of the "inner runs" of the business, must be well aware that of late years the smaller houses making files, saws, cutlery of all sorts, tools, &c., have exhibited a real fondness for "Bessemer," which they had rolled down from the "sawn middles" of rail ends, or treated in the usual way from the ingots. I don't say this is wrong, indeed I should assume that good Bessemer is quite good enough for all common pocket and table cutlery, but I quite concur in the views of those who think it is not sufficiently good or reliable for *good* pens, or table knives, or for files and saws. It is asserted, and I believe with truth, that none of the best-known Sheffield houses use Bessemer for cutlery, but confine themselves entirely to cast steel. That all the principal firms use cast steel I can avow from my own knowledge. Among the gossip of the day at Sheffield is the rather old item, has up to a local "liner," that Mr. Mark Firth has acquired the "Leufsta" hoop brand of Swedish iron, so long monopolized by William Jessop & Sons. There is nothing particularly new in this announcement, because those who know anything of the trade are well aware that Mr. Firth has bought this brand for three years past. I happen to know that Mr. Firth holds £80,000 to £100,000 worth of Swedish iron at the present time, and that he is still buying—at all events he is understood to have secured several thousand pounds worth within the past 10 days. In the 1871-3 period, Mr. Firth made very heavy profits out of Swedish iron, which he had been shrewd enough to buy well forward in the hope of a rise. The firm in Sweden with whom he had the contract for supplies wished to get out of their bargain when the price by rapid jumps had gone up from about £6 for pig to £15 and £16, and bars in proportion, and they finally paid a large sum (£20,000 was stated) to be clear of the transaction. Even at that price they made money. So did Mr. Firth. That gentleman has many advantages over ordinary buyers of foreign irons. Being a steel converter himself, he is always insured against positive loss provided he buys pretty well, and in case of rapid rises he is certain to make large profits in realizing in the open market among other steel converters.

THE COMPANIES' REPORTS,

which have become known within the past week or so, are not all tinted *couleur de rose*, although one or two do afford faint indications of that pleasant hue. Charles Cammell & Co., Limited, Sheffield, announce that the accounts for the year ending December 31, 1879, show £62,405 (including a balance of £17,389 brought forward from 1878) available for a dividend of 5 per cent., which will absorb £40,000 and leave a balance of £22,495 to be carried forward. This concern is most ably and capably managed by Mr. George Wilson, hence it is not surprising to find that the accounts come out better than those of some other local companies. This remark does not apply to Brown, Bayley & Dixon, Limited, which, under the gallant and sagacious conduct of Mr. Holland, has made great strides and will sooner or later take its true position as one of the best of similar concerns. For 1879 the loss on working has been £10,000, but the directors report that the improvement in trade is being beneficially felt by the company, every department of the works being in full operation. The Patent Shaft and Axletree Company, Birmingham, are allotting £60,000 5 per cent. debentures, and the capital of the Chatterley Iron Company, Staffordshire, is to be increased by an issue of £125,000 preference shares of £25 each. The Monkland Iron and Coal Company show a loss of £3857 on the year's operations, after writing off £10,000 for depreciation. The Darlington Iron Company have made a net profit of £431, which reduces the debit side of their profit-and-loss account to £19,903. A Bessemer plant has been erected and the works are fully engaged. The annual report of William Jessop & Sons, Limited, Sheffield, is as follows:

"After paying interest on mortgage loans, &c., there remains a net balance of £17,960, from which it is proposed to deduct £600 in reduction of the formation expenses, and £4,000 for depreciation on machinery and buildings, and to declare a dividend of 30/ per share, amounting to £11,530. 10/-, being at the rate of 5 per cent. for the year on the called-up capital, leaving a balance of £180, 3/- to be carried forward to the next account. The stocks of steel at the New York and Boston depots have been verified by Mr. W. H. Weed, of New York. There having been a marked improvement in the demand for the company's manufactures during the last few months, your directors have determined to reopen the Park Works and the Soho Rolling Mill, and these premises have been placed in working order at a small expenditure. In accordance with the articles of agreement for purchase, the sum of £25,000 has been paid in reduction of the mortgage loan."

BIRMINGHAM AND THE BLACK COUNTRY display signs of tentative weakness as regards some lines of hardware and general productions. Iron I have already alluded to. The end of the quarter may be one cause of the current quietude, and the elections another, but whatever the cause the effect is undoubted. In one branch, brass and copper goods, the associated metal rollers, tube and wire drawers, have already announced an official general reduction of one farthing per pound in their goods. Some of the hollow-ware makers are reported to be accepting export orders at 5 per cent. reduction, and various goods, such as trays, traveling boxes, &c., are 10 per cent. weaker. On the other hand, galvanized goods are strong and firm, recent cabled advices from Australia showing buoyancy in that important market. In most of the lines of hardware which are ruled by the prices of sheets, matters are stationary, and will remain so until after quarter-day. Odd sorts of goods are here and there in sustained request, but, as a rule, quietude prevails, and producers are becoming somewhat anxious as to the future.

FOREIGN.

FRANCE.

(Monteur des Intérêts Matériels.)

PARIS, March 21, 1880.—*Metals.*—The fine weather has had the effect of restoring transposition throughout the country, and a general quietude during life to trade in nearly all its branches. *Copper.*—There has not been much doing, but we are steady; *Chili Bars* we quote 175.50 @ 180.50 francs the 100 kilos; *Ingots and Slabs*, 185 @ 192.50; *Best Selected*, 195 @ 197.50, and *pure Corocoro Ore*, 180 @ 185. *Marseilles* has also been quite inactive, with a drooping tendency. They quote *Spanish Iron* 180 @ 185, *French Iron* 185 @ 190, *Lead*, 200 @ 205, *Sheet Zinc* 205 @ 210, *Lead*, 210 @ 215, *Antimony*, 215 @ 220, *Antimony* 215 @ 220, *Lead*, 220 @ 225, *Antimony*, 225 @ 230, *Lead*, 230 @ 235, *Antimony*, 230 @ 235, *Lead*, 235 @ 240, *Antimony*, 235 @ 240, *Lead*, 240 @ 245, *Antimony*, 240 @ 245, *Lead*, 245 @ 250, *Antimony*, 245 @ 250, *Lead*, 250 @ 255, *Antimony*, 250 @ 255, *Lead*, 255 @ 260, *Antimony*, 255 @ 260, *Lead*, 260 @ 265, *Antimony*, 260 @ 265, *Lead*, 265 @ 270, *Antimony*, 265 @ 270, *Lead*, 270 @ 275, *Antimony*, 270 @ 275, *Lead*, 275 @ 280, *Antimony*, 275 @ 280, *Lead*, 280 @ 285, *Antimony*, 280 @ 285, *Lead*, 285 @ 290, *Antimony*, 285 @ 290, *Lead*, 290 @ 295, *Antimony*, 290 @ 295, *Lead*, 295 @ 300, *Antimony*, 295 @ 300, *Lead*, 300 @ 305, *Antimony*, 300 @ 305, *Lead*, 305 @ 310, *Antimony*, 305 @ 310, *Lead*, 310 @ 315, *Antimony*, 310 @ 315, *Lead*, 315 @ 320, *Antimony*, 315 @ 320, *Lead*, 320 @ 325, *Antimony*, 320 @ 325, *Lead*, 325 @ 330, *Antimony*, 325 @ 330, *Lead*, 330 @ 335, *Antimony*, 330 @ 335, *Lead*, 335 @ 340, *Antimony*, 335 @ 340, *Lead*, 340 @ 345, *Antimony*, 340 @ 345, *Lead*, 345 @ 350, *Antimony*, 345 @ 350, *Lead*, 350 @ 355, *Antimony*, 350 @ 355, *Lead*, 355 @ 360, *Antimony*, 355 @ 360, *Lead*, 360 @ 365, *Antimony*, 360 @ 365, *Lead*, 365 @ 370, *Antimony*, 365 @ 370, *Lead*, 370 @ 375, *Antimony*, 370 @ 375, *Lead*, 375 @ 380, *Antimony*, 375 @ 380, *Lead*, 380 @ 385, *Antimony*, 380 @ 385, *Lead*, 385 @ 390, *Antimony*, 385 @ 390, *Lead*, 390 @ 395, *Antimony*, 390 @ 395, *Lead*, 395 @ 400, *Antimony*, 395 @ 400, *Lead*, 400 @ 405, *Antimony*, 400 @ 405, *Lead*, 405 @ 410, *Antimony*, 405 @ 410, *Lead*, 410 @ 415, *Antimony*, 410 @ 415, *Lead*, 415 @ 420, *Antimony*, 415 @ 420, *Lead*, 420 @ 425, *Antimony*, 420 @ 425, *Lead*, 425 @ 430, *Antimony*, 425 @ 430, *Lead*, 430 @ 435, *Antimony*, 430 @ 435, *Lead*, 435 @ 440, *Antimony*, 435 @ 440, *Lead*, 440 @ 445, *Antimony*, 440 @ 445, *Lead*, 445 @ 450, *Antimony*, 445 @ 450, *Lead*, 450 @ 455, *Antimony*, 450 @ 455, *Lead*, 455 @ 460, *Antimony*, 455 @ 460, *Lead*, 460 @ 465, *Antimony*, 460 @ 465, *Lead*, 465 @ 470, *Antimony*, 465 @ 470, *Lead*, 470 @ 475, *Antimony*, 470 @ 475, *Lead*, 475 @ 480, *Antimony*, 475 @ 480, *Lead*, 480 @ 485, *Antimony*, 480 @ 485, *Lead*, 485 @ 490, *Antimony*, 485 @ 490, *Lead*, 490 @ 495, *Antimony*, 490 @ 495, *Lead*, 495 @ 500, *Antimony*, 495 @ 500, *Lead*, 500 @ 505, *Antimony*, 500 @ 505, *Lead*, 505 @ 510, *Antimony*, 505 @ 510, *Lead*, 510 @ 515, *Antimony*, 510 @ 515, *Lead*, 515 @ 520, *Antimony*, 515 @ 520, *Lead*, 520 @ 525, *Antimony*, 520 @ 525, *Lead*, 525 @ 530, *Antimony*, 525 @ 530, *Lead*, 530 @ 535, *Antimony*, 530 @ 535, *Lead*, 535 @ 540, *Antimony*, 535 @ 540, *Lead*, 540 @ 545, *Antimony*, 540 @ 545, *Lead*, 545 @ 550, *Antimony*, 545 @ 550, *Lead*, 550 @ 555, *Antimony*, 550 @ 555, *Lead*, 555 @ 560, *Antimony*, 555 @ 560, *Lead*, 560 @ 565, *Antimony*, 560 @ 565, *Lead*, 565 @ 570, *Antimony*, 565 @ 570, *Lead*, 570 @ 575, *Antimony*, 570 @ 575, *Lead*, 575 @ 580, *Antimony*, 575 @ 580, *Lead*, 580 @ 585, *Antimony*, 580 @ 585, *Lead*, 585 @ 590, *Antimony*, 585 @ 590, *Lead*, 590 @ 595, *Antimony*, 590 @ 595, *Lead*, 595 @ 60

PATENT DECISION.

Hardware dealers will please take notice of the decree of Judge Lowell, of the United States Circuit Court, in the case of Millers Falls Company against Quimby S. Backus, for infringement of Bit Brace Patents, which decree was in favor of the Millers Falls Company. The full text of the opinion may be found on page 11 of *The Iron Age*, of date December 18, 1879.

We have now obtained three separate decrees against three different manufacturers, and shall continue to prosecute all infringers. When the manufacturers are able to pay the damages we shall in no case trouble dealers, but when manufacturers are unable to pay we must ask the dealers to remunerate us, else responsible dealers might combine with irresponsible makers to render worthless the most valuable patents. Any reasonable man can see the point, and we have before given all dealers sufficient notice.

MILLERS FALLS CO.,
74 Chambers street, New York.

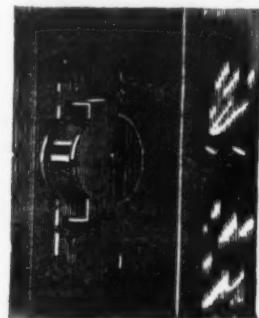
PATENT

ANTI-WINDOW

RATTLER,

FOR

Dwellings, Cars, Steamboats, &c.



The Anti-Window Rattler supplies a long needed want; it is so simple in construction that it can be used on any window, and so complete that it will prevent the slightest shaking, no matter how great the jar or how old the sash. As shown in cut, it consists of a rubber wheel in a nickel-plated or brass frame; is ornamental as well as useful, and does not interfere with raising or lowering the sash.

HEATON & DENCKLA, GRAHAM & HAINES, OTIS D. DANA,
General Agents, Agents, Agent,
507 Commerce St., Philadelphia. 113 Chambers St., New York. 56 to 52 Pearl St., Boston, Mass.

F. HABERMAN,
MANUFACTURER OF
Stamped, Japanned and Plain
TINWARE,
AND THE CHEAPEST AND BEST
OIL AND GAS STOVES
IN THE MARKET.

NOTE.—These Stoves are made under license from the Kerosene Lamp Heater Co., the royalties are paid by me, and the Stoves have license tags attached, so that dealers may purchase and sell them with perfect safety.

SEND FOR CIRCULARS.

294 PEARL STREET, NEW YORK.

THE SWIFT MILL.
ESTABLISHED 1845.

The annexed cut shows one of the many styles of Coffee Mills of our manufacture, especially adapted to Grocers' use and all retailers of coffee. They are highly ornamental, and workmanship of the very best. We make more than 30 styles.

ALSO LANE'S PORTABLE COFFEE ROASTER
Will roast 30 to 40 lbs. at once, and can be used as a stove at other times. Send for descriptive list to Manufacturers.

LANE BROS., Millbrook, N. Y.
Also sold by leading wholesale houses.

Our agents, Graham & Haines, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

Bemis & Call Hardware & Tool Co.
BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench, thus making a combination which has no equal.

For Circulars and Price List, address

BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass.

“STAR” Bolt Works.
NORWAY IRON
Carriage & Tire Bolts. Star Axle Clips, &c.
TOWNSEND, WILSON & HUBBARD, 2301 Cherry St. Philadelphia, Pa.

NATIONAL
Horse Nail Co.
MANUFACTURERS OF
FINISHED
(BRIGHT OR BLUED)



These nails are made of the best brands of NORWAY IRON, and are guaranteed to be equal to any in the market.

NATIONAL HORSE NAIL CO.,
VERCENNES, VT.
DURRIE & McCARTY, Agents,
No. 97 Chambers St., New York

The Oldest Shot Tower in America.
FOUNDED JULY 4, 1808.



THOMAS W. SPARKS,
Manufacturer of
SPARKS'

American Chilled Shot,
Rivaling the English and all Others.

STANDARD DROP & BUCK SHOT
AND BAR LEAD.

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Company,
2116 MARKET STREET,
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HENRY M. FILLEY, JOHN D. FILLEY,
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MANUFACTURERS OF

Malleable and Gray
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GENERAL HARDWARE, &c.

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Iron and Steel Rails,
Bars, Angles, Plates,
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Old Rails, Scrap Iron, Steel Rail Ends
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Contracts negotiated on the most favorable terms.

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SCALES
AND
TESTING
MACHINES

Patent “Self-Adjusting” Railroad Track Scales, pronounced “the most accurate and durable” over all competitors at World’s Fair, 1876. In use by Pennsylvania, Lehigh Valley, New York Central, Ohio, and other Railroads. Patent Coal and Hay Scales. Warehouse and Platform Scales and Scales for all purposes. Machines for testing materials, all sizes.

Patent “DRAW CUT”
BUTCHERS’ MACHINES.
Choppers, Hand and Power
Stuffers.
Lard Presses.
Warranted thoroughly made
and the best in use.
MURRAY IRON WORKS,
Burlington, Iowa.

R. C. PURVIS,
Manufacturer of
Octagon
Tea Pots.
Rear of 407 Cherry St., Philadelphia, Pa.
Send for Price List.

Established in 1839.

Formerly L. & A. G.

L. COES & CO.
Manufacturers of L. Coes’
GENUINE IMPROVED
AND MECHANICS
Wide Bar Full Length.
Wide Bar Full Length.

Patent Screw Wrenches

UNDER PATENTS DATED

JUNE 26, 1866,
MARCH 23, 1869,
REISSUED 1870.

NOVEMBER 10, 1863,
FEBRUARY 23, 1864,
REISSUED JUNE 1, 1869,
IMPROVED AUG. 1, 1877.

The back thrust when in use borne by the SHANK instead of the Handle
None genuine unless stamped “L. COES & CO.”

WORCESTER, MASS.

Warehouse, 97 Chambers St. & 81 Reade St., N. Y.
DURRIE & McCARTY, Sole Agents.

The 1880 Pennsylvania Lawn Mower

OUTSTRIPS ALL COMPETITORS.

LIGHT DRAFT AND EASILY ADJUSTED.

Every Machine Warranted to Work as Represented.

Points Claimed as being Meritorious:

Lightness combined with Strength in construction.
It runs more easily.
It will cut longer grass.
It is more durable.
It requires less repairs.
It cuts the grass more smoothly.
The attractive appearance of the machine.
It is the lightest machine in use, and all that is necessary to satisfy our customers of its superiority is to place it in competition with any other machine in the town in which they may reside.

PRICE LIST.

Style.	Width of Driving Wheels.	Power required.	Weight.	Price.
10 inch.	8 inch.	A Child.	30 ¹ / ₂ lbs.	\$14.00
12 "	8 "	A Lad.	33 ¹ / ₂ "	18.00
14 "	8 "	A Lady.	36 "	20.00
16 "	8 "	One Man Size.	38 "	22.00
18 "	8 "		43 "	24.00

NEW MACHINES.

For Cutting Long Grass
15 inch, 10¹/₂ inch Driving Wheels, 6¹/₂ inch
Cylinder, Man Size, 48 lbs. \$23.00
17 inch, 10¹/₂ inch Driving Wheels, 6¹/₂ inch
Cylinder, Man Size, 51 lbs. 25.00

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LOCKWOOD, VANDOORN & MILLER, Cleveland.
KRUSE & BAHLMAN, Cincinnati, O.
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THE NEW

“CHARTER OAK”
LAWN MOWER.

The most beautiful and perfect Lawn Mower in the world. It stands to-day at the head of the list of Lawn Mowers in the United States and Europe. It is mounted on two large driving wheels or pulleys, and instead of being on the outside of the frames, to run in the uncut grass, they are placed *inside* the frames, back of the cutting-blades, running on a shaft, each independent of the other, allowing the machine to be turned to the right or the left without injury to the sod, and to be turned around in a circle no greater than its own length, and cutting at the same time. Those desiring a perfect Lawn Mower will find the “CHARTER OAK” far superior to any other. It is more durable, easier to manage and keep in order, and the driving wheels, being *inside* the frames, enables the operator to cut the grass clean around walks, drives, flower-beds, trees and shrubbery.

Manufactured in Five Sizes.
8-inch, 10-inch, 12-inch, 15-inch (standard),
18-inch.

H. S. MANNING & CO.,

Sole Sales Agents for THE MORSE TWIST DRILL AND MACHINE CO.’S

Manufacture of Patent Machines—Relieved Nut Head, Blacksmith and Malleable Screw Taps, Screw Plates, Tap Wrenches and Patent Relievers—File Tools and Pipe Reamers, also of Solid Bolt and Pipe Dies. Furnished in U. S. Standard and Whitworth shape of threads.

111 Liberty Street, NEW YORK.

HUNTER’S ROTARY
Flour and Meal
SIFTERS.
Mixer, Scoop, Measure, Weigher, Egg Beater, Rice Washer, Tomato, Pumpkin, Starch, Wine and Fruit Strainer.

The greatest combination known, and pronounced by press and public the only safe and best sifter in the world. Made better, of better stock, sifts much faster, and in two sizes: No. 1, 3 pts.; No. 2, 5 pts. Liberal discount to the trade. Please mention this paper, and send for illustrated Price List.

J. M. HUNTER & CO., Sole Manufacturers and Owners,
38 W. Fourth St., Cincinnati, Ohio.

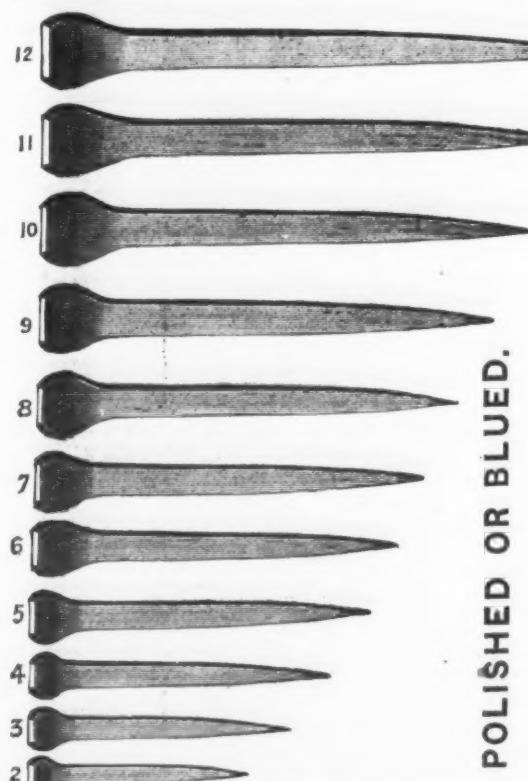
HOOPES & MERRY,

Manufacturers of
“LION” Brand or B. B.—“PHOENIX” Brand or Best Charcoal
GALVANIZED SHEET IRON,
539, 541, 543, 545 and 547 West Fifteenth Street, New York.

Corrugated Sheet Iron, Black or Galvanized. All kinds of Ironwork, Tinned or Galvanized.

MARTIN’S ENGLISH HORSE CLIPPERS.
J. J. Shannon,
1707 Market St.,
PHILADELPHIA.
Send for circular.

Recommended as
the best Hand Clipper made.
\$3.25 EACH.
Extra pieces for
sale.



AUSABLE HORSE NAILS,

Hot Forged and Cold Hammered Pointed,

Twisted, Bent and Drawn
COLD.

Are the only Nails in market that are made in imitation of the Hand Process. They have the uniformity of Machine Nails and the toughness of those hammered by hand. Our

HOT FORGED AND COLD HAMMERED POINTED NAILS

Are the Standard Nails,

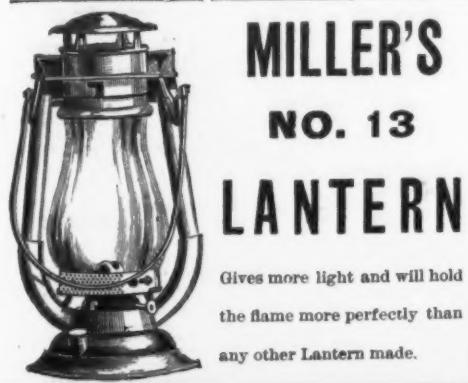
and are acknowledged to be the best in the market. They are used by the best shoers in New York, Brooklyn, Philadelphia, Chicago, Saint Louis, Milwaukee, Baltimore, &c., and

GENERALLY THROUGHOUT THE UNITED STATES.

They also compete successfully in Foreign Countries with machine and hand-made Nails of their own manufacture.

AUSABLE HORSE NAIL CO.,

4 Warren St., New York.



**MILLER'S
NO. 13
LANTERN**

Gives more light and will hold the flame more perfectly than any other Lantern made.



For Prices and Samples, address
Edw'd Miller & Co.,
Meriden, Conn.,
or
35 Warren St.,
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Manufacturers of
Lanterns,
Brass Kettles,
Machine Oilers,
Kerosene Goods,
Tinners' Trimmings,
&c., &c.



THE ECONOMIC PATENT BOILER FEED PUMP, I. B. DAVIS, Maker, Hartford, Conn. Send for Circular.

PATENT
Elliptic Spring Whistles



We call the attention of the trade to the whistle for speaking tubes, represented in above cut, as being superior, in a mechanical point of view, on account of the

PATENT ELLIPTIC SPRING,

which is much less liable to break and get out of order than the spiral spring usually used. These whistles being made entirely of metal, are very strong and durable. They are offered in a variety of styles at very reasonable prices. Send for illustrated circular and quotations.

We also offer an examination of our **PATENT REVERSIBLE DOOR LOCKS**, which by their peculiar construction, combine **simplicity, strength and durability**. In these Locks the combination of the Patent Lever and Spring renders the latch movement very easy and prompt in action.

Illustrated catalogues and price lists furnished on application.

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Manufacturers of Superior Building Hardware.
Trenton, N. J.

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JAMES M. VANCE & Co., 611 Market St. Philadelphia, Pa.; JAMES MARSHALL, 48 Warren St., New York.

**BUFFALO CHAMPION
ICE CREAM FREEZERS.**

FOUR STYLES.

FIFTEEN SIZES.

THE BEST
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IN MARKET.

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Sidney Shepard & Co.

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BUFFALO STAMPING WORKS,
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AND
CHICAGO, ILLS.

PRENTISS PATENT VISES

ADJUSTABLE JAWS,

Stationary & Patent Swivel Bottoms

ADAPTED TO ALL KINDS OF VISE WORK.

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SPEAKING TUBES.
Patented April 9th, 1879.



LITTLE GIANT
Wagon Tire Upsetter.

This Machine is strong, durable and cheap, and is superior to others for upsetting or thinning wagon tires, &c. It will not strain the tire, & it will upset tires one inch at a heat, and is adapted to tires of any size or diameter. Every Blacksmith should have one; they are the best selling machines. Hardware men, &c., will find it a valuable addition. Price only \$12.00. Send for Circular.

LITTLE GIANT MFG. CO.,
Millport, Chemung Co., N. Y.



HAWES'
STEAM
TRAP.

We guarantee this trap to work perfectly, safe and durable. Order one, if not satisfied, return at our expense. The monthly saving in fuel is more than the cost of the trap. Price from \$5 to \$15.

Welch & Lawson,
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A. F. PIKE.
Pike Station, - New Hampshire,
Manufacturer and Wholesale Dealer in
Bluestone

For Scythes, Axes, Knives and Turpentine Hacks.
Factories at Pike Station, N. H., and Evansville and
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Genuine Old Reliable, Indian Pond (Red End)
Pine, - U. S., White Mountain, Letolite, Hacker, Diamond Grit, The New British, The Little Egg, Willowby Lake, Green Mountain, Black Diamond, Moline Machine, German Pattern, Chocolate, Ax Bits.

Stones made, labeled and branded in any style de
sired. Price and QUALITY de
sired. All the above
brands are of clear, & in grit and will not glaze.

Maynard's Planters', Yankee, Hilling and Bog
Hoes, also Brades', Elwell's and others.

An unrivaled assortment.

FLANDER'S PATENT IMPROVED
CRANK PIN MACHINE,

For turning off Crank Pins in position and while the
wheels are under the engine. No railroad company
should be without it. Manufactured and for sale in
the

L. B. FLANDERS MACHINE WORKS,
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Descriptive circular on application.

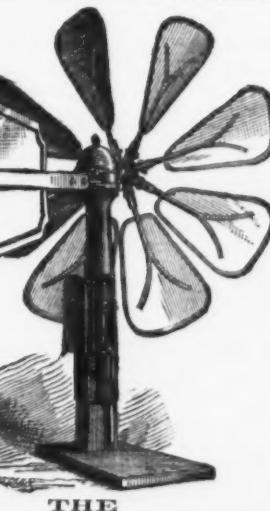
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Water Driven to any Height and Distance
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**"RIGHT SPEEDY"
CORN SHELLER**

Is the best Hand Sheller
made; does the best work
and is the best; is war-
anteed five years.

Agents Wanted in every County.
Sample sent on receipt
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Specially adapted for export.
Address Patentee and Sole
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VERMONT SNATH CO.,

Manufacturers of

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Represented in New York by Amson & Good-
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For turning off Crank Pins in position and while the
wheels are under the engine. No railroad company
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L. B. FLANDERS MACHINE WORKS,
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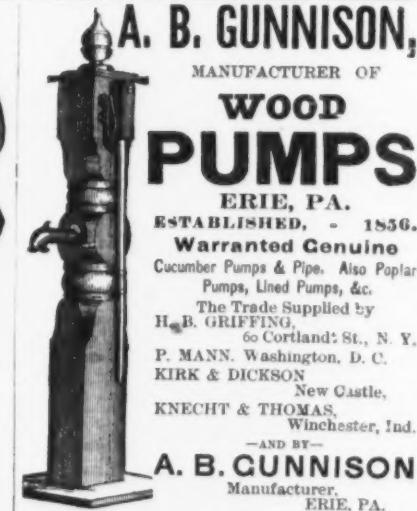
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LEONARD BROTHERS,
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**WOOD
PUMPS**

ESTABLISHED, - 1856.

Warranted Genuine
Cucumber Pumps & Pipe, Also Poplar
Pumps, Lined Pumps, &c.

The Trade Supplied by
H. B. GRIFFING,
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KIRK & DICKSON,
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AND BY
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**THE UNIVERSAL
LIFTING JACK,**

For lifting carriages,
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teams, fire engines, railway
cars, &c. Four sizes with
patent rubber cushions;
will not mar the finest
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4, 5 and 6 fingers.

GRAPE VINE GRAIN CRADLES.

SOUTHERN PATTERN GRAIN
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All of a superior quality.

None genuine unless marked
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**AN ENTIRE NEW MAKE OF
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THREE DIFFERENT
SIZE SPOUTS

SEND 15 CENTS
FOR SAMPLE

TO LEONARD BROTHERS,

SCRANTON, PA.

Punches.	
Belt or Drive.	W. dos \$2.00: 2.25: 2.50, dis 40% Bemis & Call Co.'s Cast Steel Drive, Springfield Socket,
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3.95	4.25	4.50	5.10	5.65	6.75	7.75	
3.15	3.40	3.60	4.10	4.50	5.40	6.25	
1.75	1.90	2.00	2.25	2.50	3.00	3.50	

SPECIAL ISSUES.

In the spring and autumn of each year there is published a Special Issue, the circulation of which is not less than **Twelve Thousand (12,000)** copies.

THE IRONMONGERS' DIARY AND TEXT BOOK.

This is an annual, presented free to every Subscriber to the Ironmonger and Metal Trades' Advertiser. It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

THE FOREIGN SUPPLEMENT

Is published every fourth week in connection with the extensive and world-wide circulation of the Ironmonger itself. The dates of its publication for the next twelve months will be as follows:

APRIL 3, MAY 1 and 29, JUNE 26, JULY 24, AUGUST 21, SEPTEMBER 18, OCTOBER 16, NOVEMBER 13, DECEMBER 11, JANUARY 8, 1881, FEBRUARY 5, MARCH 5.

This Supplement is published in

FIVE LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the Ironmonger not only within reach but in the native language of eighty millions of German, forty-two millions of French, twenty-eight millions of Italian, and fifty-one millions of Spanish speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

Advertisements are inserted in any language at the following

MODERATE TARIFF.

Size of Page—13 1/2 Inches Deep by 9 1/2 Inches Wide.

	13 INSERTIONS, each net.	7 INSERTIONS, each net.	3 INSERTIONS, each net.		13 INSERTIONS, each net.	7 INSERTIONS, each net.	
Gold.	Gold.	Gold.	Gold.		Gold.	Gold.	
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22.00	24.75	27.50			7.50	8.45	9.40
17.00	19.15	21.25			6.20	7.00	7.75
12.50	14.10	15.65			3.20	3.40	4.00

Advertisers will do well to use illustrations freely. Where economy of space is an object, a left page illustrated and described in one language can be suitably described in four or more languages on the opposite or right page without illustrating.

THE WHOLE FOREIGN HARDWARE TRADE,

so far as our experience of twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the Ironmonger and Foreign Supplement is a strikingly powerful and most efficient way of publicity not to be compared with any of the other ordinary channels of communication.

B. KREISCHER & SONS,
FIRE BRICK.
BEST AND CHEAPEST.
Established 1845.
Office, foot of Houston Street, East River.
NEW YORK.

NEWTON & CO.,
ALBANY, N. Y., Manufacturers of
FIRE BRICK
Stove Linings,
Range and Heater Linings.

Cylinder Brick, &c., &c.
M. D. VALENTINE & BRO.
Manufacturers of
FIRE BRICK
And Furnace Blocks
DRAIN PIPE & LAND TILE.
Woodbridge, - - - N. J.

BORGNER & O'BRIEN,
Manufacturers
FIRE BRICK
AND
Edge Pressed Furnace Blocks,
CLAY RETORTS, TILES, &c.,
Twenty-third Street,
Above Race, **PHILADELPHIA.**
Twenty years' practical Experience.

PERTH AMBOY TERRA COTTA CO.,
Successors to
A. HALL & SONS, Perth Amboy, N. J.,
ARCHITECTURAL TERRA COTTA
AND
FIRE BRICK.
170 Broadway, NEW YORK.

Brooklyn Clay Retort
AND
FIRE BRICK WORKS.

Manufacturers of Clay Retorts, Fire Brick, Gas
House and other Tile, Cupola Brick, &c. Dealers in
and Miners of Fire Clay and Fire Sand. Clay banks at
Van Dyke, Elizabeth, Richards and Partition Sts., Brooklyn, N. Y.
Office: No. 86 Van Dyke St.

Watson Fire Brick Manufactory,
ESTABLISHED 1856.
JOHN R. WATSON, Perth Amboy, New Jersey.
Manufacturer of

FIRE BRICK,
For Rolling Mills, Blast Furnaces, Foundries,
Gas Works, Lime Kilns, Tanneries, Boiler
and Grate Setting, Glass Works, &c.
Fire Clays, Fire Sand, and Kaolin for Sale.

HENRY MAURER,
Proprietor of the
Excelsior Fire Brick & Clay
Retort Works,
Manufacturer of **FIRE BRICK, HOLLOW**
BRICK AND CLAY RETORTS.
WORKS: PERTH AMBOY, NEW JERSEY.
OFFICE & DEPOT, 418 to 422 East 23d St., N. Y.

TROY FIRE BRICK WORKS,
Troy, N. Y.,
JAMES OSTRANDER & SON,
ESTABLISHED 1848.
Manufacturers of
FIRE BRICK,

Tuyeres, Tiles, Blast Furnace Blocks, &c. Miners and
Dealers in Woodbridge Fire Clay and Sand, and Stoner
and Kaolin.

Established 1864.

GARDNER BROTHERS,
Manufacturers of
STANDARD SAVAGE FIRE BRICK,
TILE & FURNACE BLOCKS,
OF ALL SHAPES AND SIZES.

Clay Gas Retorts and Retort Settings, and
Miners and Shippers of Fire Clay.
OFFICE: 116 Smithfield St., Pittsburgh, Pa.
WORKS: Mt. Savage Junction, Md., and Lockport, Pa.

HALL & SONS,
FIRE BRICK,
Buffalo, N. Y.

MILLER'S BRICK PRESSES
(Established 1844),
FIRE and RED BRICK,
And Brickmakers' Tools in General.
SAM'L. P. MILLER & SON,
309 South 5th St., Philadelphia.

RUDOLPH FRANK,
Office, 229 FULTON STREET,
NEW YORK.
ALUMINA and
SILICA
FIRE BRICKS

Works,
BROOKLYN, on
the East River.
Through Cars, Canal Boats
and Vessels loaded direct from the
Works to all points.

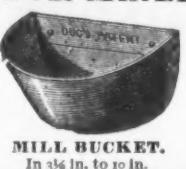
DUC'S IMPROVED ELEVATOR BUCKET.



ALWAYS FIRST PREMIUM.
NO CORNERS TO CATCH.
THROWS FREE AND CLEAR.
200,000 IN USE.

Send for Circular.

THE BEST FOR MILLS.
THE BEST FOR BREWERS.
THE BEST FOR MALTSTERS
THE BEST FOR MINERS.



MILL BUCKET.
In 3 1/4 in. to 10 in.



THE STOREHOUSE BUCKET.
(Partial straight front.)
In 12 in., 14 in., 16 in. and 17 in. Sizes.

Very Durable and Strong.
T. F. ROWLAND, Sole Manufacturer,
BROOKLYN, N. Y.

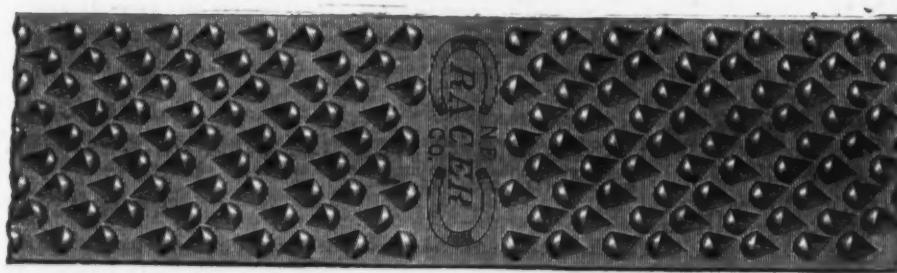
NICHOLSON FILE CO., Manufacturers of **FILES AND RASPS.** ALSO **Filers' Tools & Specialties.**

Manufactory and Offices at Providence, R. I.

The following space will be used in illustrating our specialties, the matter being changed weekly.

IMPROVED HORSE RASPS.

PATENTED.



We present herewith an illustration of an ingenious arrangement of the teeth of *Horse Rasps*, from which it will be seen that the faces of each alternate row of teeth are presented to the work at reversed angles, producing an obliquity of the cutting edges, which gives a shearing or drawing cut. Thus, the substance is cut away, instead of being torn, and a much larger quantity of material is removed with the same power, than if the faces of the teeth were arranged at right angles to the edges of the rasp, as is the usual custom.

By this arrangement the teeth are much more durable, their points being less liable to crumble in use; and, as will be seen from their principle of construction, they are less liable to become clogged; the refuse, instead of being forced into the space in front of the tooth, as in the old style, is to some degree, by the very action of the operator, pressed outward, and thus made to clear itself.

For Horse Rasps of this brand, both *tanged* and *plain*, we have adopted the name of "Racer." They are made of the usual sizes, from an *extra* quality of "mild" steel, each tooth having a double blow, and are tempered by a process which gives them extreme toughness. The verdict of those who have used this rasp, demonstrates that it is unequalled by any rasp known.

PURE SILICA FIRE BRICK, MADE BY THE **Landore Siemens Company,**

Specially for OPEN-HEARTH FURNACES.

More "heats" obtained from them than from any other Bricks known.

Imported, to order only, by

PHILIP S. JUSTICE, Sole Agent in United States,
14 NORTH FIFTH STREET, PHILADELPHIA.



Established 1838
Bevin Bros. Mfg.
Co.,
Easthampton, Ct.
Manufacturers of
SLEIGH BELLS,
House, Tea, Hand,
Gong Bells, &c.
Bell Metal Kettles.

Stool, Cover and Book only \$145.75.
Organs, 13 Stops, 3 set Reeds, Stool,
Book, only \$80. Paper free.
DAN'L F. BEATTY, Washington, N. J.

John T. Lewis & Bros
No. 231 South Front St.
PHILADELPHIA.



Brooklyn White Lead Co.



TRADE MARK
White Lead, Red Lead & Litharge.
89 Malden Lane, NEW YORK.
FISHER HOWE, TREASURER.

JOHN JEWETT & SONS
Manufacturers of the well-known brand of
WHITE LEAD.



TRADE MARK
ALSO MANUFACTURERS OF
LINSEED OIL.
182 Front Street, NEW YORK.



TRADE MARK
The Atlantic White Lead
and Linseed Oil Co.,
Manufacturers of
White Lead (Atlantic), Red Lead,
Litharge & Linseed Oil.
ROBERT COLGATE & CO.,
287 Pearl Street, New York



Clock Springs and Small Springs
of every description from best Cast Steel.
BRISTOL, CONN.

Torrey's Door Springs.



P. R. DUNNE,
Manufacturer,
182 Fulton St.,
NEW YORK.

Stool, Cover and Book only \$145.75.
Organs, 13 Stops, 3 set Reeds, Stool,
Book, only \$80. Paper free.
DAN'L F. BEATTY, Washington, N. J.

PIANOS

BEECHER & PECK,

Successors to Milo Peck, Manufacturers of

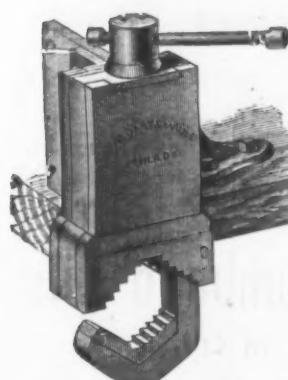
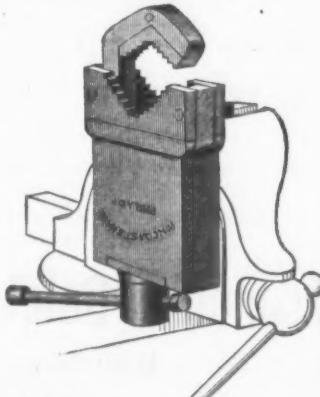


PECK'S DROP PRESS

11 Regular Sizes. Hammers from 50 lbs. to 2500 lbs.
WE HAVE A LARGE STOCK OF SPECIAL DROP PATTERNS.Special attention given to the making of all Drop Dies.
Special Machinery fitted up to order.

Send for Price List. New Haven, Conn.

IMPROVED PIPE-FITTERS' VISE.

STRONG,
LIGHT,
EFFICIENT,
CHEAP.

To meet the requirements of the large number of persons who have use for such an article, we invite attention to our Improved Pipe Vise. This Vise can be used either as a permanent fixture to work-bench, attached to angle plate or can (unlike others) be held between the jaws of any Machinist's or Blacksmith's Vise; the movable jaw being ON THE SIDE permits work to be gripped at any desired point without slipping it from end, and allows FITTINGS BEING HELD SECURELY; the Box is made of Malleable Iron, the Screw of Wrought Iron, and the remainder of Solid Steel throughout. The Steel Gripping Jaws can be duplicated and replaced at any time when worn out. It is a very convenient tool, well adapted to the wants of Plumbers, Pump Fitters, Well-Drivers, and all who have use for a tool that is strong, light, efficient and cheap which can be readily carried about with kit of tools.

MANUFACTURED BY

PANCOAST & MAULE,

243 and 245 South Third Street, Philadelphia.

Wheeler, Madden & Clemson

MFG. CO.,

MIDDLETOWN, NEW YORK.

Manufacturers of

WARRANTED CAST STEEL

SAWS

of every description, including

Circular, Shingle, Cross-Cut, Mill, Hand.

WOOD SAWS, Etc., Etc.

AMERICAN SAW CO.,

Manufacturers of

Movable Tooled Circular Saws,

PERFORATED CROSS-CUT SAWS

And SOLID SAWS of all kinds.

Trenton, N. J.



Successor to LYON & FELLOWS. Factory and Office, 14 Dunham Place, Williamsburgh, N. Y.

TURNED
MACHINE SCREWS,
One-sixteenth to five-eighths diameter.
Heads and points to sample.
IRON, STEEL and BRASS.

JOHN FELLOWS,

ENTERPRISE Mfg. CO. of PA.

PATENTED HARDWARE MANUFACTURERS & IRON FOUNDERS,

THIRD and DAUPHIN STS., PHILADELPHIA.

New York Branch House with

DURRIE & McCARTY, 97 Chambers Street.

INVALUABLE IN MAKING FRUIT BUTTERS, WINES & JELLIES.

Enterprise Combination Fruit Press.
Price, \$3.50.

SPECIALTIES.
Enterprise Patent Cold Handle Double Pointed
SMOOTHING & POLISHING IRONS
CHAMPION TOBACCO CUTTERS,
PATENT MEASURING FAUCETS,
SELF-WEIGHING CHEESE KNIVES,
&c., &c.

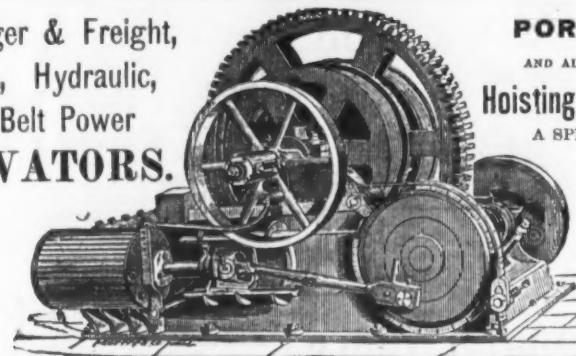
SPECIALTIES.
AMERICAN
COFFEE, SPICE & DRUG MILLS,
SAUSAGE STUFFERS,
FRUIT, LARD and JELLY PRESSES,
CHAMPION DRIED BEEF SHAVERS,
Bung-Hole Borers,
&c. &c.

TO THE DRUGGIST.
INVALUABLE
DECORATIONS, INFUSIONS, SYRUPS,
&c.

TO THE DRUGGIST.
INVALUABLE

TO THE DRUGGIST.
INVALU

Passenger & Freight,
Steam, Hydraulic,
and Belt Power
ELEVATORS.

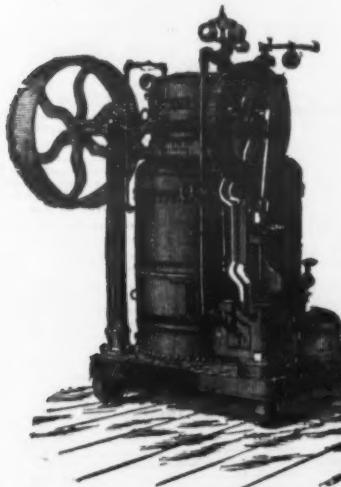


PORtABLE
AND ALL KINDS OF
Hoisting Machinery
A SPECIALTY.

IRON FURNACE HOIST,

For Handling Stock to Top of Stack with One or Two Platforms.

STOKES & PARRISH, 3001 Chestnut St., Philadelphia.



SHAPLEY ENGINE.

Patented Feb. 10, 1874.
Reissued June 22, 1875.

Compact, Practical, Durable and
Economical.

Acknowledged to be the best in use. This boiler
stands unrivaled.

MANUFACTURED BY

SHAPLEY & WELLS,
Binghamton Iron Works,
Binghamton, N. Y.
MANUFACTURERS OF
Stationary Engines and Boilers.

Also Machinery for Mills of all kinds and
Tanneries. Also their celebrated Bark
Mills, acknowledged to be the best.
Send for reduced price list circular.



THE MACKENZIE PATENT CUPOLA & BLOWER.

Send for circular to
Smith & Sayre Mfg. Co.,
PROPRIETORS, 21 Cortlandt St., New York.

This Cupola has made a great revolution in melting Iron. It differs from all others in having a CONTINUOUS TUYERE, or in other words, the blast enters the fuel at all points. Above one ton capacity per hour, they are made oval in form. This brings the blast to the center of the furnace with the least loss of heat. The continuous Tuyere causes complete amount of power to be used with the continuous Tuyere causes complete diffusion of air throughout the furnace, and uniform temperature, melting ten or fifteen tons an hour with the pressure of blast required to melt two or three tons in an ordinary Cupola. It also enables us to save very largely in time and fuel, the experience of our customers showing a gain of twenty-five to fifty per cent. in time, and twenty-five to thirty per cent. fuel over the ordinary Cupola, and a BETTER QUALITY OF CASTING, especially in light work. This is due to the thorough diffusion of the air and more perfect combustion of the fuel, resulting from the iron, making a softer and tougher casting.

We manufacture these Cupolas of any desired capacity, numbered from 1 to 20, including the number 1, which melts 1000 pounds in 1000 hours; No. 1, one ton; No. 2, two tons; No. 3, three tons per hour, and so on up to 15, or 20 tons. We have improved the construction of these Cupolas, which has increased their strength and durability, and sought to make them as convenient for working and repairs as our own and the experience of our customers could suggest.



THE STOCKWELL SCREW & MACHINE Co

CLEVELAND, OHIO, U. S. A.,
MANUFACTURE

BOLT AND PIPE THREADING MACHINES,

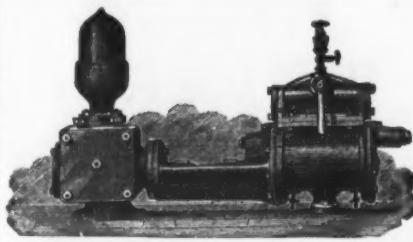
HEADS FOR LATHE ATTACHMENT,
Magic Screw Plates for Pipe and Bolts,
SET AND CAP SCREWS, TAPS, &c., &c.
Send for Catalogue.

CHUCKS.
MANUFACTURED BY
A. F. CUSHMAN,
Hartford, Conn., U. S. A.

Independent 4-Jawed Chucks, from 6 in. to 24 in. in diameter. Common Lever Scroll Chucks, from 3 in. to 24 in. Patent Geared Chucks, from 3 in. to 12 in. Common Geared, from 2 in. to 12 in. A large variety of Chucks for Amateurs' Foot Lathes. Drill Chucks for all kinds of machines and purposes. Patent Geared Chucks for Hollow Spindle Cutting-off Machines. Bench and portable Centering Chucks, and special chucks made to order. Satisfaction guaranteed. All of the above are from new patterns, with every improvement a long experience can suggest. Send for price list.

**BUCKET PLUNGER
STEAM PUMPS**
FOR EVERY DUTY.
Valley Machine Co.,
Easthampton, Mass.

Steel Stamps.
N.Y. STENCIL WORKS, 87 N.Y. ST. N.Y. STEEL LETTERS, FIGURES &c.



**A. S. CAMERON'S
PATENT**

"SPECIAL" STEAM PUMP

Is the Standard of Excellence at Home and Abroad.

For reduced price lists address **A. S. CAMERON**, East 23d Street, New York.

Babcock & Wilcox Water-Tube Steam-Boiler

OVER 35,000 HORSE-POWER NOW IN USE. ADAPTED FOR ALL PURPOSES.

SAFETY FROM

In Sections Easy of Transportation.

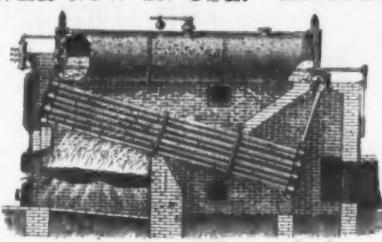
No Bolted, Screwed or Packed Joints.

All Joints Made by Expanding Wrought

Iron Tubes into Bored Holes.

Can be Erected or Repaired by Ordinary

Mechanic.



CENTENNIAL EXPOSITION MEDAL AWARDED THIS BOILER FOR HIGHEST ECONOMY AND EFFICIENCY ON TEST.

Illustrated Circulars and other desired information promptly furnished. **BABCOCK & WILCOX**, Engineers, 30 Cortlandt St., N. Y.

Bliss & Williams,
MANUFACTURERS OF ALL KINDS OF
PRESSES



Also Manufacturers of
SPECIAL MACHINERY

FOR

WORKING SHEET
METALS, &c.

FRUIT & other
CAN TOOLS.

MEDAL AWARDED



Plymouth, Pearl and
John Streets,
BROOKLYN, N. Y.,
U. S. A.



PARIS EXPOSITION. 1878.

NEW OTTO SILENT GAS ENGINE.

Working Without Boiler, Steam,
Coal, Ashes or Attendance.
Started Instantly by a Match, it gives Full
Power Immediately.
When Stopped, all Expense Ceases.
No explosions, no fires, no cinders, no gauges, no
pumps, no engineer or other attendant while running.
Recommended by insurance companies.
UNSURPASSED IN EVERY RESPECT for hoisting
in warehouses, printing, ventilating, running
small shops, &c.

2, 4 and 7 H. P. and upwards. Built by
SCHLEICHER, SCHUMM & CO.,
Engineers and Machinists,
3045 Chestnut Street, Philadelphia.

Ludlow Valve Mfg. Co.,

OFFICE AND WORKS:
1029 to 1054 River St. & 67 to 83 Vail Ave., Troy, N. Y.,
VALVES.

Double and Single Gate, $\frac{1}{2}$ in. to 48 in.—outside and inside Screws, Indicator, &c.
for Gas, Water and Steam. Send for Circular.

Also FIRE HYDRANTS.

CUYAHOGA WORKS

MANUFACTURES
STEAM
Hammers
LAND
AND
Marine Engines,
BLAST FURNACE
Machinery.
Send for Circulars.
Cleveland, Ohio, U. S. A.

THORNE, DeHAVEN & CO., Drilling Machines,

21st Street, above Market, Philadelphia.
PORTABLE DRILLS. Driven by power in any direction.
RADIAL DRILLS. Self-feeding.
VERTICAL DRILLS. Self-feeding.
MULTIPLE DRILLS. 2 to 50 Spindles.
HORIZONTAL BORING AND DRILLING MACHINES.
HAND DRILLS. CAR BOX DRILLS.
SPECIAL DRILLS. For Special Work.

**AIR ENGINES. NO WATER.
NO ENGINEER.**
No extra insurance! Absolutely safe! Simple! Reliable! Durable!
Most convenient and economical power known.
SHERRILL ROPER AIR ENGINE CO.,
Manufacturers of Air Engines, Elevators and Hoisting Machinery
91 & 93 Washington Street, New York.

ORAM & ATHERTON
NEW AND SECOND HAND MACHINERY
STAVE MACHINERY A SPECIALTY
OFFICE & WORKS 155-157 RIVER ST. CLEVELAND, O.

DE-STROKE POWER HAMMERS.

CONSTRUCTION IMPROVED.

Prices Reduced. Seven Sizes,
5 to 250 Pounds.

The 15 and 25 pound sizes are specially adapted for
Flemakers' use, the other sizes for general forging.
Send for circular and references.

DIENELT, EISENARDT & CO.
MAKERS,
1306, 1308, 1310 Howard St., Philadelphia, Pa.

KEYSTONE
Portable Forges,
All sizes, for the lightest
to the heaviest work, run
Chain Gear and Flat
Belts. Strong, blast and
durable. Send for Catalogue
and Price list to



The 15 and 25 pound sizes are specially adapted for
Flemakers' use, the other sizes for general forging.
Send for circular and references.

DIENELT, EISENARDT & CO.
MAKERS,
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KEYSTONE
Portable Forges,
All sizes, for the lightest
to the heaviest work, run
Chain Gear and Flat
Belts. Strong, blast and
durable. Send for Catalogue
and Price list to



THE PRATT & WHITNEY CO.,
Hartford, Conn., U. S. A.,
Make specialties of

DROP HAMMERS

Punching Presses, Hand Drilling Machines, Ratchet
Drills, Combination Lathe Chucks, Cutters for
Teeth of Gear Wheels, Screw Plates, Hand, Ma-
chine, Nut and Pipe Taps, Bolt Cutters, &c., &c.

ROCK BREAKERS.

Blake's Patent Expired—End of Monopoly.
The undersigned, sole owners of the old Levi-
athan, Gates patent, and the Brown's patent Rock
Breakers, will guarantee our crushers to break
the toughest iron of Blake's (or any other.) Send
for circulars. Also Stone Mills and all kinds of
Mining Machinery made on short notice.
Office, 59 Canal Street, Chicago, Ill.

GATES & SCOVILL IRON WORKS.

TACKLE BLOCKS.
Rope and Iron Strap of all kinds. Lig-
numvitae Wood for Ten-Pin Balls.
Wm. H. McMillan & Bro.,
Office, 118 South Street, New York.
Factory, 33 to 40 Penn St., Brooklyn, N. Y.

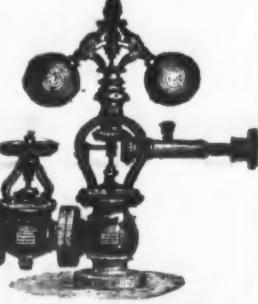
Machinery, &c.

THE JUDSON GOVERNOR.

It is a common method to advertise Governors *cheapest*, unless satisfactory to the customer, and then charge *High Prices* for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection on the part of the buying parties, after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying a Governor should stipulate that the durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the accompanying list. We guarantee the Judson Governor will do all any other Governor can do, and in accuracy and durability—the main essentials—we guarantee it shall do more.

Reduced Price List.
OCTOBER 15, 1878.

For dimensions of Governor, see Illustrated Price List.



Improved Steam Governor.
No Charge for Boxing or Cartage.
JUNIUS JUDSON & SON, Rochester, N. Y.

THE SHIVE STEAM ENGINE GOVERNOR.

Reduced Price List, Nov. 1, 1879.

Size of Governor	EXTRA FOR				
	Black.	Fin- ished.	Ball and Lever.	Auto- matic Safety Check.	Stop Valve.
3/4 in.	\$16.00	\$18.00	\$1.90	\$2.25	\$.....
1	18.00	20.00	2.35	3.50	\$.....
1 1/4	20.00	23.00	3.25	4.50	\$0.00
1 1/2	23.00	27.00	3.50	4.75	7.50
2	27.00	31.00	4.25	5.50	10.00
2 1/4	30.00	34.00	4.75	6.00	12.00
2 1/2	36.00	41.00	5.25	6.50	11.00
3	45.00	52.00	6.25	7.50	14.00
3 1/4	54.00	62.00	6.50	7.75	17.00
3 1/2	64.00	73.00	7.00	8.25	21.00
4	74.00	84.00	7.50	8.50	22.00
4 1/4	84.00	94.00	8.00	9.00	23.00
4 1/2	94.00	104.00	8.50	9.50	24.00
5	112.00	125.00	9.25	10.50	27.00
6	132.00	145.00	9.50	11.00	30.00
7	152.00	165.00	9.75	11.50	33.00
8	160.00	176.00	10.00	12.00	36.00
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